National Park Service

Environmental Assessment

June 2003

Chesapeake and Ohio Canal National Historical Park

Rehabilitation of Historic Towpath & Retaining Wall at Widewater

Montgomery County, Maryland

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

ENVIRONMENTAL ASSESSMENT for REHABILITATION of HISTORIC TOWPATH AND RETAINING WALL at WIDEWATER

CHESAPEAKE AND OHIO CANAL NATIONAL HISTORICAL PARK
MONTGOMERY COUNTY, MARYLAND

Summary

The National Park Service is proposing to upgrade the existing canal towpath and retaining wall south of Lock 15 at Widewater Lagoon located within the Chesapeake & Ohio Canal National Historical Park. The purpose of the proposed action is to reestablish a safe and continuous towpath for visitors, park staff, and U.S. Park Police near Widewater and Lock 15; develop a solution for reestablishing the towpath that is sustainable and economical; and rehabilitate and stabilize the historic towpath walls.

This Environmental Assessment analyzes the impacts of six alternatives (a No-Action Alternative and five action alternatives) on the human environment in accordance with the National Environmental Policy Act of 1969. Under the Preferred Alternative, the proposed work includes construction of two elevated walks, repair of three sections of the dry laid stone wall along the canal, and the rehabilitation of two segments of towpath using surface aggregate. The Preferred Alternative would either have no or negligible impacts on air quality; agricultural lands; prime and unique farmlands; archeological resources; cultural landscapes; ethnographic resources; Indian Trust resources; soundscape management; lightscape management; topography, geology, and soils; threatened and endangered species; wildlife; socio-economics and land use; environmental justice; community facilities and services; infrastructure; and park operations. Minor, long-term, adverse impacts to floodplains, wetlands, land cover and vegetation, and aesthetics and visual resources may result from the Preferred Alternative. Minor, short-term, adverse impacts may result to the visitor experience and use if trail closures or detours are necessary during construction. Implementation of the Preferred Alternative would be expected to have minor to moderate, long-term, beneficial impacts on the historic structures, visitor use and experience, and safety from rehabilitation and continuation of the level towpath.

Note to Reviewers and Respondents

If you wish to comment on the Environmental Assessment, you may mail comments to the name and address below by July 30, 2003. Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment. We will make all submissions from organizations or businesses and from individuals identifying themselves as representatives or officials or organizations or businesses available for public inspection in their entirety.

Please address all comments to:
Doug Faris, Superintendent
Chesapeake & Ohio National Historical Park
1850 Dual Highway
Hagerstown, Maryland 21740

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1.0 PURPOSE OF AND NEED FOR ACTION

The National Park Service proposes to rehabilitate the existing canal towpath and stabilize the retaining wall south of Lock 15 at Widewater Lagoon within the Chesapeake & Ohio Canal National Historical Park. This Environmental Assessment analyzes the potential environmental impacts that would result from the implementation of this action. This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969, the regulations of the Council on Environmental Quality for implementing the Act (40 Code of Federal Regulations 1500-1508), and the National Park Service Director's Order # 12 (Conservation Planning, Environmental Impact Analysis, and Decision-making). In accordance with Section 800.8 of the Advisory Council on Historic Preservation's regulations (36 CFR 800), the process and documentation required for preparation of this Environmental Assessment will also be used to comply with Section 106 of the National Historic Preservation Act.

1.1 PURPOSE OF THE ACTION

The National Park Service is proposing to upgrade 760 feet of the existing historic canal towpath and retaining wall south of Lock 15 at Widewater Lagoon located within the Chesapeake & Ohio Canal National Historical Park. The purpose of the proposed action is to reestablish a safe and continuous towpath for visitors, park staff, and U.S. Park Police near Widewater and Lock 15; develop a solution for reestablishing the towpath that is sustainable and economical; and repair and stabilize the historic towpath walls.

1.2 NEED FOR THE ACTION

The towpath, south of Lock 15, is approximately 760 linear feet in length. Because it is located in an area where soils have eroded down to the bedrock over time, the towpath is very hazardous and provides unsafe walking and biking conditions. The proposed treatments to rebuild the towpath and stabilize the walls are largely dependent on the different site conditions. The towpath in this area was divided into four segments and a detour route based on the towpath's site conditions. Figure 1 depicts the first four segments and the detour route.

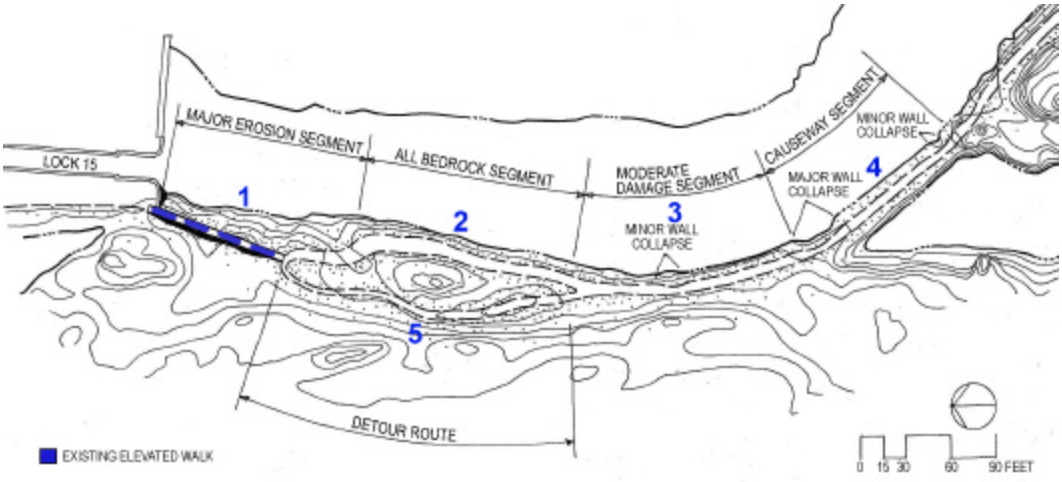

Figure 1: Existing Conditions

The conditions of the towpath from north to south are described below:

1. Major Erosion Segment (approximately 150 linear feet) – This segment is immediately south of Lock 15. The towpath was originally located on a raised stone wall; however, the wall has been washed out, resulting in a bedrock surface. An elevated walk spans most of this area and extends about 100 feet from the elevated lock area. The elevated walk does not follow the existing historic towpath alignment. The remainder of the segment has rocky outcrops, which makes pedestrian use difficult (see Figure 2).

2. All Bedrock Segment (approximately 140 linear feet) – After the Major Erosion Segment, the towpath surface is bedrock. Most of the fill in this area has eroded resulting in an uneven bedrock surface. The rocky outcrops make pedestrian and bicycle access difficult and not safe. The alignment is close to the historic configuration of the towpath (see Figure 3).

3. Moderate Damage Segment (approximately 170 linear feet) – This section of the towpath is relatively smooth when compared to the previous two segments. Fill is present, although signs of erosion are prevalent. Except for limited areas of bedrock near the waterline, the wall in this segment is stonework. The stonework appears intact with one exception, where a minor wall collapse has occurred (see Figure 4).

4. Causeway Segment (approximately 140 linear feet) –This section of the towpath is narrow and bounded on both sides by water bodies. The canal exists to the east and a small pond exists to the west, causing the towpath to have a causeway effect. The towpath was built with stone walls on both sides. A major wall collapse has occurred in this area on the north end of the causeway and a minor area on the south end. The existing rocky path is rock fill, not bedrock. A few trees exist on the causeway (see Figure 5).

5. Detour Routes – A small section (approximately 210 linear feet) of the towpath at Lock 15 provides a bypass around the Major Erosion and all bedrock segments that the existing elevated walkway does not cross (see Figure 6). The elevated walkway may have been positioned to facilitate access to this detour route. Several trees are located along this route. The cross-section of this route is typically swale like, with higher ground or rocks on both sides. This segment rejoins the towpath alignment at a point approximately 20 feet into the moderate damage segment.

In addition, Locks 15 through 20 and the towpath are contributing features of the C&O National Historical Park's National Register of Historic Places designation. Current sections of the towpath south of Lock 15 do not follow the historic towpath grade.

The rehabilitation of the existing towpath and stabilization of the retaining wall would contribute directly to supporting the mission of the C&O Canal National Historical Park, which is to protect and preserve the park's cultural and natural resources, educate the public about those resources, and provide for public recreation and enjoyment (NPS, 2001b). Visitors today have to

circumvent around hazardous terrain and unsafe walking and biking conditions, which can create an unenjoyable experience.

1.3 BACKGROUND, HISTORY AND PLANNING

The Chesapeake & Ohio Canal National Historical Park was established by an act of Congress in 1971 and is the only canal towpath that remains intact today in the United States (NPS, 2002c). Running a length of 185 miles from Washington, DC, to Cumberland, Maryland, it remains virtually unbroken and without substantial modification to its original character. It is also the most intact survivor of the American canal-building era.

The Chesapeake and Ohio Company was chartered in 1825 to construct a canal that would connect the tidewater on the Potomac in Washington, DC, to the headwaters of the Ohio River in Pennsylvania. The company acquired the rights of the then defunct Patowmack Company, which was formed by George Washington in hopes of developing a series of river improvements that would extend the navigation of the Potomac River (NPS, 2002b). The flow of the river was too erratic to make most of the measures successful; therefore, the Chesapeake and Ohio Company used the experience gained from the Patowmack Company's failures to create a separate canal that would parallel the Potomac River (NPS, 2002b).

Construction for the canal began in 1828 on this commercial waterway. The 185-mile section to Cumberland, Maryland, was completed in 1850, but numerous difficulties kept the progress of the canal from stretching further north. During its operation, more than 500 boats were in constant operation; however in the 1870s, canal trade began to decline due to the ever-increasing use of the B&O Railroad, which began construction on the same day as the Chesapeake and Ohio Canal and reached Cumberland in 1842, eight years before the canal came through. The emergence of the railroad, coupled with major floods in 1877, 1886, 1889, and again in 1924, forced the end of the active era of the canal in 1924 (NPS, 2002c).

The canal stands today as an illustration of 19th-century canal-building technology that is exemplified by the length of the canal, the 74 lift locks to accommodate a rise of 605 feet, the 11 stone aqueducts that span the major Potomac tributaries, seven dams, hundreds of culverts that carry roads and streams beneath the canal, and a 3,117-foot tunnel that carries the canal through a large scale rock formation (NPS, 2002d).

The Chesapeake and Ohio Canal was purchased from the Baltimore and Ohio Railroad by the U.S. Federal government in 1938 and placed under the National Park Service. It received its status as a National Monument in 1961. In 1971, President Richard Nixon signed legislation making it the Chesapeake and Ohio Canal National Historical Park (NPS, 2002c).

Since ownership of the canal was transferred to the National Park Service, the National Park Service has inherited the difficulties faced by the Canal Company in keeping the towpath passable in the Widewater area. Due to numerous flooding events, some, but not all, sections of the towpath, in the Widewater area, have been destroyed and restored. The historic retaining wall supports the canal side of the towpath. This wall is heavily damaged and is continuing to deteriorate due to freeze/thaw action, vegetation growth, erosion, and periodic flooding. The original towpath, in this area, is almost completely obliterated and rough and jagged rocks are exposed as a result of several floods (NPS, 2002g).

Since 1984, the only work completed in the Widewater area included redecking at the bridge at Lock 15 and towpath filling around the stop lock. The major towpath work required after the 1996 flood occurred downstream of the Widewater area (Estes, 2002).

Beginning in 2002, the National Park Service began to revisit the condition of the towpath and retaining wall in conjunction with the safety of its visitors and park employees. A Site-Selection Value Analysis for the project was completed in August 2002 pursuant to National Park Service guidelines. As part of this analysis, the National Park Service staff developed and considered a range of alternatives. The alternatives are being considered in this document as they all address the purpose and need for the action. From the Site-Selection Value Analysis, five alternatives plus the No-Action Alternative were retained for further evaluation.

The Environmental Screening Form was completed by the National Park Service staff in January 2002 and revised June 4, 2002. The Environmental Screening Form identified potential issues and impact topics that require additional investigation to address the requirements of the National Environmental Policy Act and Director's Order – 12. The form is provided in Appendix A.

A site visit and project team meeting were conducted on August 27, 2002. The project team met to discuss the alternatives and impact topics to be further analyzed in this Environmental Assessment. The project team visited the project site as well as park resources, which have the potential to be affected. A follow-up site visit was conducted on October 10, 2002.

The National Park Service has also begun consultation with the Maryland Historical Trust in accordance with Section 106 of the National Historic Preservation Act of 1966. Section 106 compliance is a separate process, which is often conducted concurrently with the National Environmental Policy Act analysis. As indicated in the Director's Order – 12 Handbook, the Section 106 process would be completed prior to a completed and signed Finding of No Significant Impact.

1.4 RELATIONSHIP TO OTHER PROJECTS AND PLANS

In addition to the Widewater project, the Chesapeake and Ohio Canal National Historical Park is undertaking other preservation and maintenance projects. As part of the analysis and consideration of potential direct, indirect and cumulative impacts, the project team identified the following projects that might cumulatively affect the Widewater Towpath Project. These are:

- Sewer Odor Reduction (Potomac Interceptor)
- Tavern Entrance Road Rehabilitation
- Interior Utility Renovations at Great Falls Tavern
- Old Anglers Inn Parking

A current project managed by the District of Columbia Water and Sewer Authority involves the Potomac Interceptor. In conjunction with the National Park Service, a plan has been developed to address the reduction of sewer-generated odors. These odors are emitted from vent openings along the length of the Potomac Interceptor. This includes the C&O Canal from the Great Falls Tavern area to the Capital Crescent Trail near Georgetown. An Environmental Assessment was prepared and the public review period for the Environmental Assessment concluded on October 11, 2002. The Preferred Alternative outlines the construction of four buildings that will house filter units. These filters will clean the gases emitted from the sewer. This will not only address

the odor issue, but will assist in prolonging the lifetime of the infrastructure by limiting the formation of corrosive conditions. The four buildings will be located on National Park Service property. The filter buildings at the Old Angler's Inn parking area and Fletcher's Boat House will contain public restroom facilities. Upon finalization of the environmental assessment, work will begin on contract specification and engineering drawings. Construction is anticipated to begin in 2004.

Work is in the planning stages for three other projects. The Federal Highway Administration is developing alternatives for the rehabilitation of the entrance road and parking lot areas of Great Falls Tavern. Items to be addressed will include a bike lane and realignment of the parking lot. An Environmental Assessment for this project will be completed during the fall of 2003.

The Great Falls Tavern Phase II project will address interior utility upgrades including a new HVAC system, interior wall repairs, public and staff restroom upgrades, walkways meeting the regulations of the Americans with Disabilities Act, and a protective floodwall. Portions of this project will be studied within the Environmental Assessment for the Federal Highway project.

The final project within this area will explore improvements to the Old Angler's Inn parking area. In conjunction with the DC Water and Sewer Authority, Potomac Interceptor project, a new public restroom will be added to the parking area. Work for the parking lot design is in its preliminary stages. Coordination is taking place between the National Park Service, the Army Corps of Engineers, Montgomery County, and law enforcement/rescue organizations.

1.5 ISSUES AND IMPACT TOPICS

National Park Service staff completed an Environmental Screening Form (see Appendix A) that identifies potential issues and impact topics that require additional investigation to address the requirements of the National Environmental Policy Act of 1969 and Director's Order # 12. The issues and impact topics identified on the form are explained below.

1.5.1 ISSUES

The primary issue evaluated in this Environmental Assessment is visitor safety. The design for the rehabilitation of the towpath and the stabilization of the retaining wall must reestablish a safe and continuous towpath for visitors, park staff, and U.S. Park Police. In addition, the towpath must be sustainable, while not being cost-prohibitive.

Furthermore, the current towpath does not follow the historic alignment for the towpath. The historic towpath is missing for approximately 755 feet at the upstream end of the Widewater section (NPS, 1984). This is the most heavily traveled area in the park. Approximately one million visitors per year visit this area, which is approximately one quarter of the total park visitation. Exposed rock makes hiking and biking difficult and a wooden footbridge traverses the upper end of the rocks adjacent to Lock 15. The repair and stabilization of the retaining wall must not detract from the historic nature of the towpath. Past projects to restore and stabilize the towpath and retaining wall have met with resistance and controversy from the public, media, environmental groups, and congressional delegations due to the impacts to the natural and cultural resources. The rehabilitation to the Widewater area would have to be sensitive to the concerns previously voiced by citizens.

Finally, the towpath is within the 100-year floodplain and is part of a wetland community. The design of the towpath and retaining wall must not affect the functions and the integrity of the floodplain or the wetland. The design must not substantially affect the hydraulics or flood level.

1.5.2 IMPACT TOPICS INCLUDED IN THIS DOCUMENT

Impact topics are resources of concern that could be affected, either beneficially or adversely, by the range of alternatives. Impact topics were identified on the basis of Federal laws, regulations, Executive Orders, National Park Service *Management Policies* (2001), the Environmental Screening Form from Director's Order # 12, and from the National Park Service knowledge of limited or easily impacted resources. The Environmental Screening Form was completed by the National Park Service staff and identifies potential issues and impact topics that required additional investigation to address the requirements of the National Environmental Policy Act of 1969 and Director's Order # 12. Specific impact topics were developed to ensure the alternatives were compared on the basis of the most relevant topics. As a means of evaluation, impact topics included in this document were analyzed in more detail to compare the environmental consequences of the No-Action Alternative and the other five action alternatives.

The impact topics identified on the Environmental Screening form are explained below.

- Safety – Improvements to safety and security are part of the primary need for the proposed action. Alternatives to the project were assessed to determine their effect on safety and security of the visitors, park staff, and U.S. Park Police.

- Historic Structures/Sites – Lock 15 and the towpath are contributing elements to listing of the Widewater area on the National Register of Historic Places. The project alternatives were assessed to determine the potential impact on the integrity of these resources.

- Wetlands – The project area lies within or directly adjacent to a wetland as classified by the National Park Service. Alternatives to the project alternatives were assessed to determine if they would affect the natural or beneficial functions of the wetland.

- Floodplains – The project area lies within the 100-year floodplain. The alternatives of the project were assessed to determine if they would affect the natural or beneficial functions of the floodplain.

- Land Cover and Vegetation– The project would impact the land cover and vegetation in and surrounding Lock 15 of the Chesapeake and Ohio Canal. Therefore, alternatives to the proposed action were analyzed to determine the effect on land cover and vegetation.

- Aesthetics and Visual Resources – The Widewater area of the C&O Canal offers visitors scenic vistas of the natural environment and certain features of the canal along the towpath. The construction of non-conforming elements such as an elevated walk has the potential to alter the visual quality of the Widewater area; therefore, aesthetics and visual resources has been included as an impact topic.

- Visitor Use and Experience – Providing for public recreation and enjoyment is part of the mission of the Chesapeake and Ohio Canal National Historical Park. Therefore, alternatives to the project were assessed to determine their effect on this topic.

1.5.3 IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

The non-controversial topics listed below would either not be affected or would be affected negligibly by the alternatives evaluated in this document. Therefore, these topics have been briefly discussed in this section of the Environmental Assessment and then dismissed from further consideration or evaluation. Negligible effects are effects that are localized and immeasurable at the lowest level of detection.

1.5.3.1 AIR QUALITY

Air quality became a national concern in the mid-1960s, leading to the passage of the Air Quality Act in 1967. The Act (now referred to as the Clean Air Act) and subsequent amendments have established procedures for improving conditions, including a set of National Ambient Air Quality Standards (NAAQS).

The U.S. Environmental Protection Agency is directed to set levels for pollutants in order to protect the public health. The NAAQS have been adopted for six pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead. A system of monitoring stations has been established across the country to measure progress in meeting these goals. If an area is found to exceed the allowable concentrations, local officials are required to develop a plan for achieving air quality that meets the standards.

The Washington, DC, metropolitan area, which includes Montgomery County, is a designated nonattainment area for ozone. Only negligible short-term impacts from emissions would occur during construction of any alternative and no long-term impacts would result. Therefore, this impact topic was dismissed from further consideration.

1.5.3.2 SOUNDSCAPE MANAGEMENT

In accordance with the National Park Service *Management Policies* (2001) and Director's Order #47, *Sound Preservation and Noise Management*, an important objective of the National Park Service's Mission is the preservation of natural soundscapes associated with National Park Service units. Natural soundscapes exist in the absence of human caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and duration of human caused sound considered acceptable varies among National Park Service units. Acceptance levels for each park unit are generally greater in developed areas and less in undeveloped areas.

The rehabilitation of the towpath would result in no long-term differences in noise frequencies, magnitudes, or durations. Construction activities would have negligible, short-term, adverse impacts on noise levels. The contractor would be required to comply with local noise ordinances.

The proposed action would have no long-term change to existing noise levels or result in any long-term impact to soundscape management. Therefore, this impact topic was dismissed from further consideration.

1.5.3.3 LIGHTSCAPE MANAGEMENT

In accordance with National Park Service *Management Policies* (2001), the National Park Service strives to preserve to the extent possible the quality of lighting associated with natural ambient landscapes and the night sky. The rehabilitation and stabilization of the towpath would not require outdoor lighting. The park closes at sundown; therefore, no manmade lighting would be necessary in or around the project area. Because the proposed action would not impact or contribute to the natural ambient lightscapes of the C&O Canal, lightscape management was dismissed as an impact topic.

1.5.3.4 INDIAN TRUST RESOURCES

Secretarial Order 3175 requires that any anticipated impacts to Indian Trust Resources from a proposed action by Department of Interior agencies be explicitly addressed in environmental documents. The Federal Indian Trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaskan native tribes.

Indian Trust Resources do not exist within the project site. The lands are not held in trust by the Secretary of Interior for the benefit of Indians. Therefore, this impact topic was dismissed from further consideration.

1.5.3.5 ETHNOGRAPHIC RESOURCES

The National Park Service defines ethnographic resources as any "site, structure, object, landscape or natural resource feature assigned traditional legendary, religious, subsistence or other significance in the cultural system of a group traditionally associated with it" (Director's Order - 28, *Cultural Resources Management Guidelines*, p. 181). No ethnographic resources exist in the project area nor would the rehabilitation of the towpath affect any of these resources. Therefore, this impact topic was dismissed from further consideration.

1.5.3.6 CULTURAL LANDSCAPES

As described by the National Park Service Director's Order – 28, *Cultural Resource Management Guidelines*, (p. 87), a cultural landscape is:

> "…a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use, reflecting cultural values and traditions."

Thus, cultural landscapes are the result of the long interaction between man and the land, and the influence of human beliefs and actions over time upon the natural landscape. Shaped through time by historical land-use and management practice, as well as politics and property laws, levels of technology, and economic conditions; cultural landscapes provide a living record of an area's past. However, the dynamic nature of modern human life contributes to the continual reshaping of cultural landscapes; making them a good source of information about specific times and places, at the same time rendering their long-term preservation a challenge.

The Widewater area south of Lock 15 is considered a cultural landscape; however, no formal cultural landscape studies have been completed and it is not part of the designation of the Widewater area as part of the National Register of Historic Places. The Widewater area represents one of the most hydraulically complex sections of the Chesapeake and Ohio Canal. The rocky and uneven nature of the landscape in this area is attributed in part to decisions made by canal builders in the 1820's.

In many places along the canal, including the Widewater area, engineers found it necessary to build retaining walls along the sides of the canal to prevent it from caving in (NPS, 1974). Some of the walls consisted of dry-laid wall (without mortar), while others consisted of riprap (NPS, 1974). Engineers designing the canal elected to utilize the dry river channel to minimize necessary blasting through boulders in a nearly one-mile segment at Bear Island, near the settlement of Cropley and downstream from Lock 15.

The landscape consists of a towpath on the river side of the canal that served as a walkway for mules used to pull boats along the channel (NPS, 1974). The opposite side of the canal is known as the berm. Implementation of the current proposed action would not alter the design or engineering, topography, vegetation, circulation features, spatial organization, or land use patterns of the cultural landscape. Any adverse impacts associated with upgrading the canal towpath and retaining wall would be long-term, but negligible to the cultural landscape. In addition, any visual, audible, and atmospheric intrusions associated with construction would be temporary and negligible, lasting only as long as construction. Because the integrity of the existing landscape would be unaffected, cultural landscapes was dismissed as an impact topic.

1.5.3.7 ARCHEOLOGICAL RESOURCES

Due to the amount of flooding this area has received, the project area has been exposed to the damaging effects of erosion throughout its history. The existence of intact archeological resources in the project area is remote because flood events have scoured soils away down to bedrock. In addition, the proposed action would not involve any excavation of the project site. Restoration of the towpath would be provided through the addition of fill and surfacing aggregate. The proposed action would have a negligible impact, if any, to existing archeological resources along the canal and towpath. Therefore, this impact topic was dismissed from further consideration.

1.5.3.8 TOPOGRAPHY, GEOLOGY, AND SOILS

The project area is located in Montgomery County, Maryland, within the Upland Section of the Piedmont Plateau Province (MD Geological Survey, 1967). The bedrock is Precambrian

metamorphosed sedimentary rock overlain with unconsolidated sand, silt, clay, and gravel deposits (USGS and NPS, 2000).

The site elevation is approximately 130 feet above mean sea level. The soils on the site are classified as Rock outcrop-Blocktown complex. It consists of areas dominated by exposed bedrock and detached boulders and stones. The soil is between the areas of rock and supports a sparse stand of trees and brush (NRCS, 1995).

The proposed action would have only negligible, localized, short-term, adverse impacts to soils due to construction and no short-term or long-term change to the existing geology or topography, or result in any long-term impact to these features. Therefore, this impact topic was dismissed from further consideration.

1.5.3.9 AGRICULTURAL LANDS, PRIME AND UNIQUE FARMLANDS

The area is not suitable for agricultural use because of rocky terrain; therefore, none of the soils mapped on the project site are regulated under the Federal Farmland Protection Policy Act (7 CFR Part 658 of July 5, 1984, as superseded by the Farmland Protection Policy Act Final rule of June 17, 1994). The soil type in the project area (Rock outcrop-Blocktown complex) is not classified as a prime farmland soil, soil of statewide importance, or unique farmland soil (NRCS, 1995; NRCS, 2002). Therefore, this impact topic was dismissed from further consideration.

1.5.3.10 WILDLIFE

The project area is located in a protected natural area surrounded by a human-dominated urban setting. The project area, within the Chesapeake and Ohio Canal National Historic Park, provides important local habitat to aquatic and terrestrial wildlife and serves as a movement corridor for fish, birds, and larger mammals. Wildlife species present in and along the project area include upland chorus frog (*Pseudacris triseriata*), spring peeper (*Hyla crucifer*), wood frog (*Rana sylvatica*), spotted salamander (*Ambystoma maculatum*) black rat snake (*Elaphe obsoleta*), beaver (*Castor canadensis*), white-tailed deer (*Odocoileus virginianus*), mallard (*Anas platyrhynchos*), merganser, blue jay (*Cyanocitta cristata*), common flicker (*Colaptes auratus*), belted kingfisher (*Ceryle alcyon*), pileated woodpecker (*Dryocopus pileatus*), great blue heron (*Ardea herodias*), chimney swift (*Chaetura pelagica*), northern cardinal (*Cardinalis cardinalis*), American crow (*Corvus brachyrhynchos*), gray squirrel (*Sciurus carolinensis*), and Carolina chickadee (*Parus carolinensis*). These and other wildlife species are subject to continuous low-impact human intrusions. The proposed project would be designed to have minimal additional intrusions. Therefore, construction activities would have a negligible, short-term disruption to wildlife.

Any alternative implemented would result in a low level of wildlife disturbance not unlike the ongoing human activities in the Chesapeake and Ohio Canal National Historical Park. Therefore, all alternatives would cause short-term and negligible disturbances. No long-term disturbances would result from five of the six build alternatives. One alternative (Alternative D) would result in negligible, long-term, adverse impacts to amphibians associated with disturbed wetland habitats. Therefore, wildlife was dismissed as an impact topic. Information on the alternatives can be found in Section 2, Alternatives.

1.5.3.11 RARE, THREATENED, ENDANGERED, CANDIDATE SPECIES AND SPECIES OF SPECIAL CONCERN

The U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources, Wildlife and Heritage Division, were contacted to determine whether any known critical habitats or listed rare, threatened, or endangered species or species of concern have been documented on or adjacent to the project area. The Fish and Wildlife Service has stated that, except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. (USFWS, 2002a)

The Maryland Department of Natural Resources stated potential adverse impacts to state rare, threatened, and endangered species might occur and a site visit should be conducted (MDNR, 2003a). On March 26, 2003 a site visit with Maryland Department of Natural Resources regional biologist was conducted. At the site visit and in a follow-up letter regarding the field visit, the regional biologist stated repair of the towpath would have "minimal direct impact on rare, threatened, or endangered species" as long as the soil and canopy of adjacent habitats are not disturbed and construction activities are limited to the current footprint of the towpath and berm (MDNR, 2003b). Construction activities would be limited to the project area and would be limited to the project area. Consultation letters received from the resource agencies are provided in Appendix B.

A rare plant survey of the Potomac River Gorge was conducted for the National Park Service in the late 1990's. The survey identified 20 species of state-listed rare, threatened, and endangered plants in the upper portion of Bear Island, which is adjacent to the project area (Wiegand, 1999). Twenty uncommon "watch list" species were also recorded.

Bald eagles, listed as federally threatened, have nested on Conn Island (about 1.25 miles northeast of the project area) since 1986. This nest along the Potomac River is one of the few bald eagle nesting sites in Maryland located on non-tidal water. Conn Island is also one of the furthest west of all documented active bald eagle nest sites in Maryland (NPS, 2002h). The bald eagle classification of threatened status means the species is not considered in immediate danger of extinction.

All impacts would be limited to areas already disturbed by hiker traffic along the towpath and not unlike the ongoing human activities in the area. Construction would be limited to the project area. Based on the current site conditions and consultation, no known critical habitats or listed rare, threatened, or endangered species or species of concern exist in the project area. Therefore, this impact topic was dismissed from further consideration.

1.5.3.12 SOCIO-ECONOMIC ENVIRONMENT AND LAND USE

The project area is located in Great Falls, Montgomery County, Maryland, in close proximity to the town of Potomac, within the Chesapeake and Ohio Canal National Historical Park. This project area consists predominately of deciduous forest bordering the canal waterway. Most of the surrounding area encompasses residential areas. No residences will be directly impacted by the proposed action.

Because the project area is Federally-owned, there is no local zoning designation for this land. The existing land use will not change under the proposed action. The General Management Plan for the Chesapeake and Ohio Canal National Historical Park (1981) lists Widewater as Zone A – National Interpretive Center Zone. Zone A is defined as:

> "…areas containing major historic restoration opportunities where the park visitor will be able to see a functioning canal in a historic setting. The areas were also selected for accessibility; availability of parklands for development of visitor facilities, and the compatibility of the surrounding environment outside the park…The Concept of development of these areas is that of an outdoor living museum. Historical accuracy is imperative in these re-creations of historic scenes…in an effort to convey the construction, maintenance, function, purpose, shortcomings, commerce, and way of life on the Chesapeake and Ohio Canal (NPS, 1981)."

The proposed project would be consistent with National Park Service zoning as described in the General Management Plan.

Minimal employment opportunities and some related revenues for construction materials are anticipated during construction. The impacts would be negligible, short-term, and beneficial.

The proposed action would have no effects on existing or long-term site use or conditions; as such, there would be no impact on the socio-economic environment or land use. Therefore, this impact topic was dismissed from further consideration.

1.5.3.13 ENVIRONMENTAL JUSTICE

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations directs Federal agencies to identify and address as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority or low-income populations.

According to the 2000 U.S. Census figures, the minority community in the vicinity of the project area is approximately 18.3 percent and approximately 20 percent of the population is over the age of 65 (Census Bureau, 2002). The percentage of all individuals living below the poverty level in the vicinity of the project area is 2.5 percent compared to the approximately 3.1 percent of the state population. There are no disproportionate amounts of minority or low-income populations in the study area. There would be no health or environmental effects to any populations or communities. Therefore, environmental justice was dismissed as an impact topic.

1.5.3.14 COMMUNITY FACILITIES AND SERVICES

The proposed action would have no effects on existing or future site use or conditions. The rehabilitation would have no effect on community facilities and existing levels of services for emergency response, fire and rescue, police, and schools. Therefore, this impact topic was dismissed from further consideration.

1.5.3.15 INFRASTRUCTURE

Existing infrastructure adjacent to the project site includes Lock 15, a small rock dam, a larger rock dam, an elevated walk, and facilities/pipes for the Washington Aqueduct along Berma Road. The proposed action would have no to negligible, long-term, adverse impacts on existing infrastructure. The existing elevated walk over the Major Erosion Segment would be removed and replaced with a new elevated walk. This impact would be negligible, short-term, and adverse during construction. The other existing drainage infrastructure such as the locks and dams would not be affected because they are not within the proposed construction area. One 36-inch corrugated metal pipe exists under the Causeway Segment. The pipe would be saved or replaced if needed to maintain the hydrological connection; thus, no long-term, adverse impact to the site's infrastructure is anticipated. Therefore, infrastructure was dismissed as an impact topic.

1.5.3.16 PARK OPERATIONS

C&O Canal National Historical Park is part of the national park system, encompassing 185 miles from the tidewater at Georgetown in Washington, DC, to Cumberland, Maryland. The project area is located at Lock 15 at milemarker 13.45 near Widewater just south of Great Falls Tavern. The park allows hiking, biking, camping, canoeing, and boating.

The park is open daily from sunup to sundown. The park's budgets for FY 2002 and FY 2003 are $7.6 million and $8.3 million, respectively. The park hosts numerous special events during the course of the year, such as Canal Kids Day.

Rehabilitation and stabilization of the towpath south of Lock 15 would have negligible, short-term, adverse impacts on park operations because visitors would be made to take an already existing detour, the Berma Road detour route, during construction. Park rangers would have to be on hand to make sure visitors follow the detour, but it is not anticipated that additional park rangers would be needed during construction. Because the impacts to park operations would be negligible, park operations was dismissed as an impact topic.

2.0 ALTERNATIVES

On August 14, 2002, the project team conducted a Value Analysis to identify feasible alternatives that should be dismissed or retained for further analysis in the Environmental Assessment. The Value Analysis is a methodical planning approach to develop feasible alternatives and then compare the benefits and disadvantages of each alternative. The project team identified the following factors as objectives to guide in the evaluation of the alternatives:

1. Reestablish a safe and continuous towpath for visitors, park staff, and U.S. Park Police in the vicinity of Widewater and Lock 15.

2. Develop a solution for reestablishing the towpath that is sustainable, constructible, and economical while minimizing impacts to the historical integrity of the trail.

3. Repair and stabilize the historic towpath walls in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

As part of the Value Analysis and project planning, a range of alternatives were considered. Those alternatives that were not realistically feasible or do not adequately meet the project purpose and need were dismissed. The No-Action Alternative and five build alternatives were retained for further evaluation by the National Park Service and for inclusion into this Environmental Assessment. Specific construction details and methods shown on the design drawings are representative only and will be subject to change as design progresses.

2.1 ALTERNATIVE A – NO-ACTION

The No-Action Alternative describes the action of continuing the current management operation and conditions. No action does not imply or direct discontinuing the current action or removing existing uses, development, or facilities. The No-Action Alternative provides a basis for comparing the management direction and environmental consequences of the other alternatives. Under the No-Action Alternative, the conditions described previously for each segment would remain, and pedestrians and bicyclists would continue to be detoured around the towpath in the area of Lock 15. The canal walls would not be repaired and safety issues would persist. Figure 7 depicts the existing elevated walk, which would remain under the No-Action Alternative.

2.2 ALTERNATIVE B – TWO ELEVATED WALK SEGMENTS (PREFERRED ALTERNATIVE)

Under Alternative B, the National Park Service would restore the historic alignment and approximate grade of the towpath by using a combination of elevated walks in segments where erosion is severe, and towpath rehabilitation where damage is less severe. An elevated walk would be built in the Major Erosion and Causeway Segments. The towpath would be rehabilitated in the All Bedrock and Moderate Damage Segments.

Although final design of the elevated walk segments remains to be determined, it is intended to be an all, or predominately, wood structure that is visually compatible with other similar structures along the canal. The elevated walk structure would vary in height from approximately three feet to approximately ten feet above the existing eroded surface. Guardrails that meet current safety code requirements would be provided along both sides of the elevated walk, except in locations where a minimal dropoff is determined to not mandate a guardrail. Guardrails would be designed to either fold down or be removable in time of flood. Elevated walks would be fully accessible.

Improvements in the rehabilitated towpath segments would vary from complete rehabilitation of the eroded stone retaining walls down to or below water line in very limited areas, to rehabilitation of two or three foot high stone walls in the All Bedrock Segment, to minimal infilling to restore the towpath surface where the stone wall is intact. Rehabilitated stone walls would match the existing stone walls as much as possible. The surface in the rehabilitated towpath segments would be composed of fill overlaid by well graded towpath surfacing aggregate similar to that used historically on the towpath. This surface, which would have a binder incorporated if necessary, would be fully accessible.

Aerial views and cross-sections of the four segments and treatment methods are shown in Figure 8. The elevation of the Major Erosion walkway would be sufficient to allow flow from the nearby wetland into the canal.

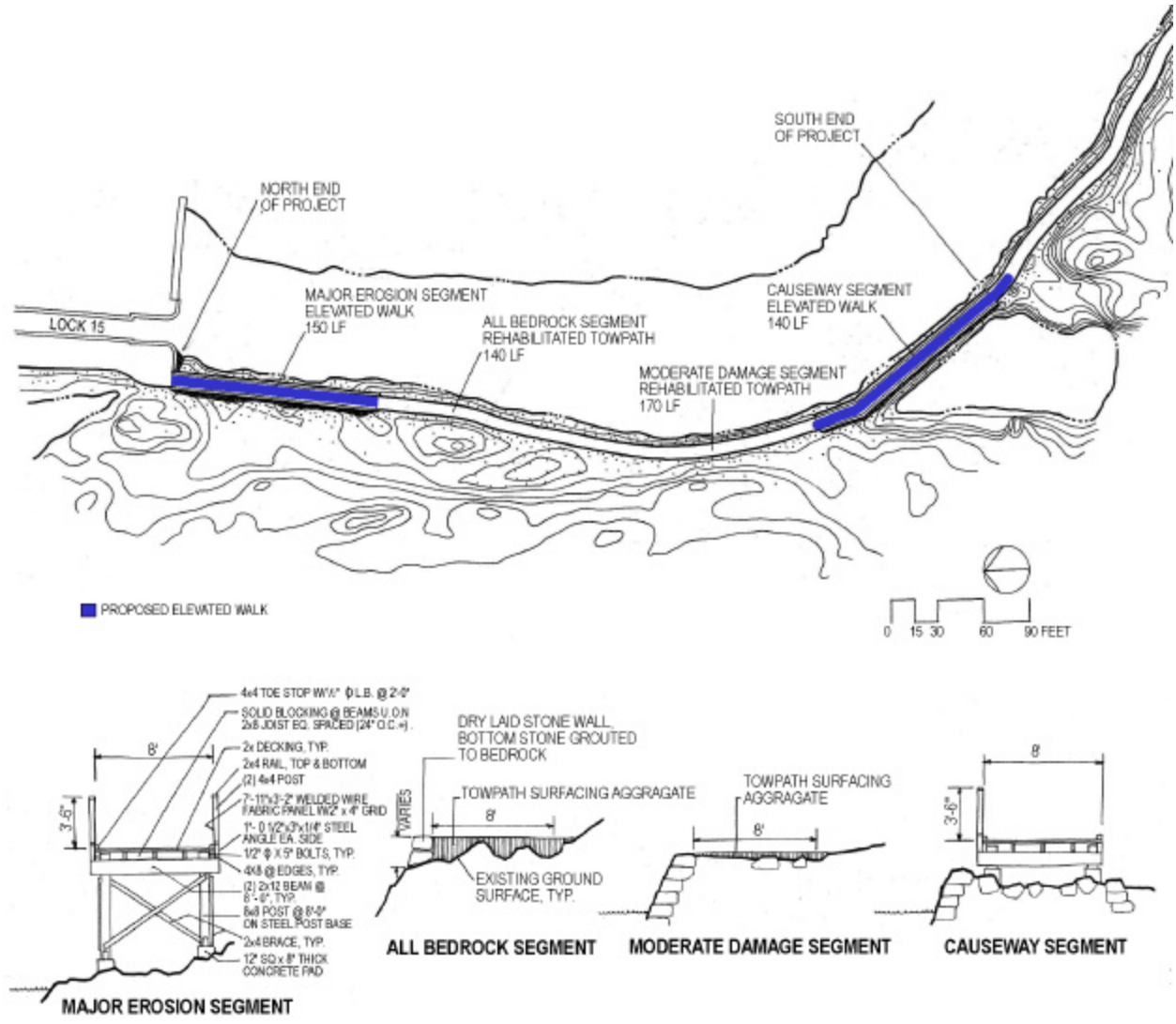

Figure 8: Aerial views and cross-sectional view of Alternative B – Two elevated walks.

2.3 ALTERNATIVE C – ALL ELEVATED WALK SEGMENTS

Under Alternative C, the National Park Service would construct an elevated walk structure on the historic towpath alignment in all four towpath segments throughout the entire project length.

The design of the elevated walk structure for the entire project length would be the same as the elevated walk structure in the Major Erosion and Causeway Segments in Alternative B. In the All Bedrock and Moderate Damage Segments, the elevated walk surface would be as much as three feet higher than the historic towpath grade.

Aerial views and cross-sections of each segment are shown in Figure 9.

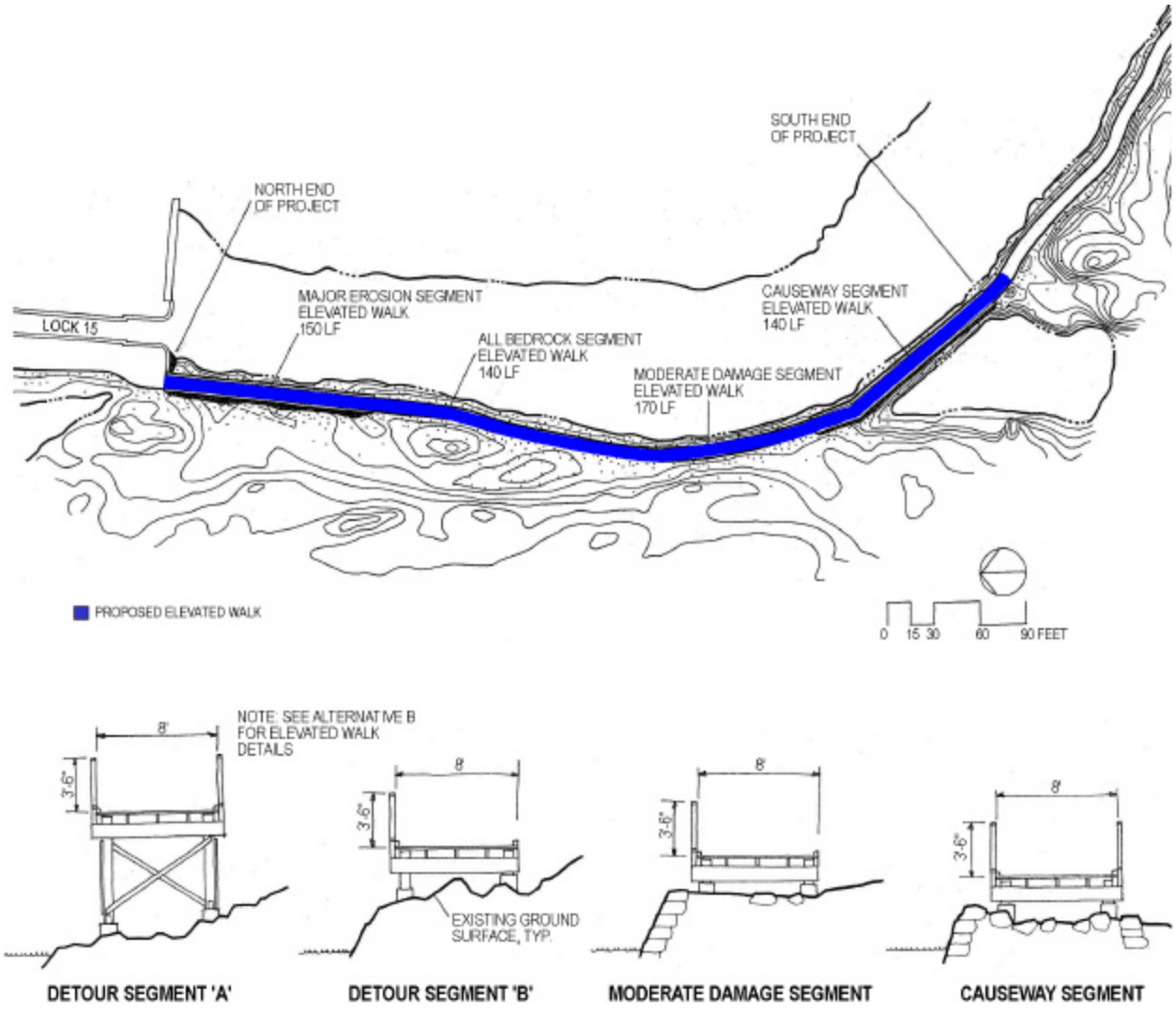

Figure 9: Aerial views and cross-sectional view of Alternative C – All elevated walks.

2.4 ALTERNATIVE D – ALL TOWPATH

Under Alternative D, the National Park Service would rehabilitate the historic alignment and grade of the towpath in all four towpath segments throughout the entire project length.

Towpath rehabilitation in the All Bedrock and Moderate Damage Segments would be the same as in Alternative B. Towpath rehabilitation in the Major Erosion Segment would incorporate stone walls up to approximately ten feet high on both sides of the towpath. Wall construction would probably extend below the water line on the canal side. Towpath rehabilitation in the Causeway Segment would incorporate stone walls up to approximately three feet high on both sides of the towpath for the entire length of this segment and complete reconstruction to or below the water level in one location on the canal side.

Aerial views and cross-sections of each segment are shown in Figure 10.

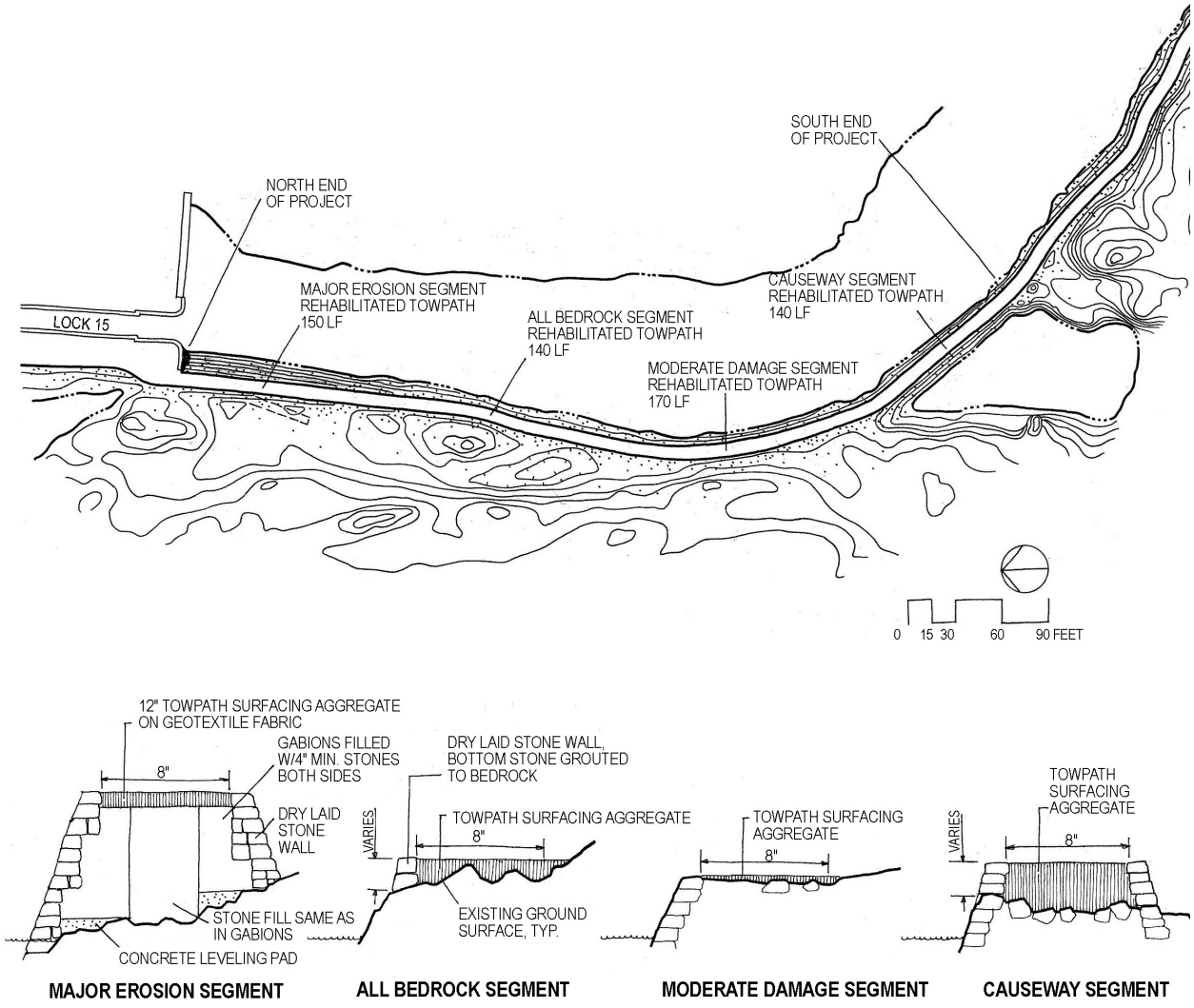

Figure 10: Aerial views and cross-sectional view of Alternative D – All towpath.

2.5 ALTERNATIVE E – DETOUR AND TWO ELEVATED WALK SEGMENTS

Under Alternative E, the National Park Service would construct a trail around the most heavily damaged segment, the Major Erosion Segment, and the adjacent All Bedrock Segment. The trail would therefore not be on the historic towpath alignment for over half the total length of the project. South of the point where the relocated segment rejoins the towpath, the towpath would be rehabilitated in the Moderate Damage Segment, and an elevated walk would be built in the Causeway Segment.

The rerouted trail would incorporate an elevated walk at the north end (Detour Segment 'A') that would avoid the Major Erosion Segment and connect with an existing route (Detour Segment 'B') used by visitors to "detour" around the very difficult to negotiate Major Erosion and All

Bedrock Segments. Trail construction in Detour Segment 'B' would require removal of rocks and trees, and filling with towpath surfacing aggregate to create an accessible surface.

Towpath reconstruction in the Moderate Damage Segment and the elevated walk in the Causeway Segment would be the same as in Alternative B.

Aerial views and cross-sections of the four segments and treatment methods are displayed in Figure 11.

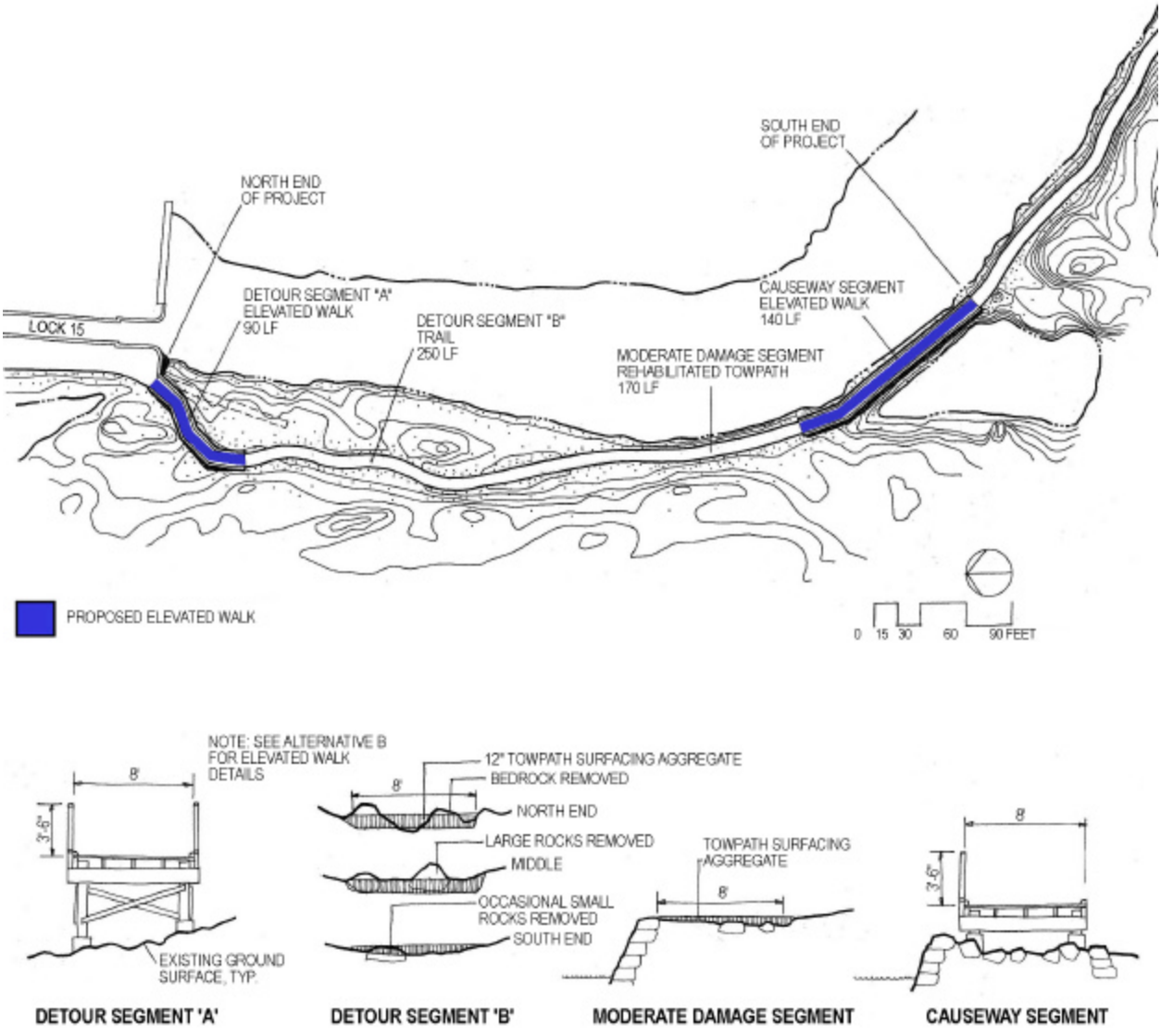

Figure 11: Aerial views and cross-sectional view of Alternative E - Detour and two elevated walk segments.

2.6 ALTERNATIVE F – ONE ELEVATED WALK SEGMENT

Alternative F is similar to Alternative B except only an elevated walk at the Major Erosion Segment would be constructed and the towpath would be rehabilitated along the other three segments. The surface in the rehabilitated towpath segments would be composed of fill overlaid by well graded towpath surfacing aggregate similar to that used historically on the towpath. This surface, which would have a binder incorporated, if necessary, would be fully accessible.

Aerial views and cross-sections of the four segments and treatment methods are displayed in Figure 12.

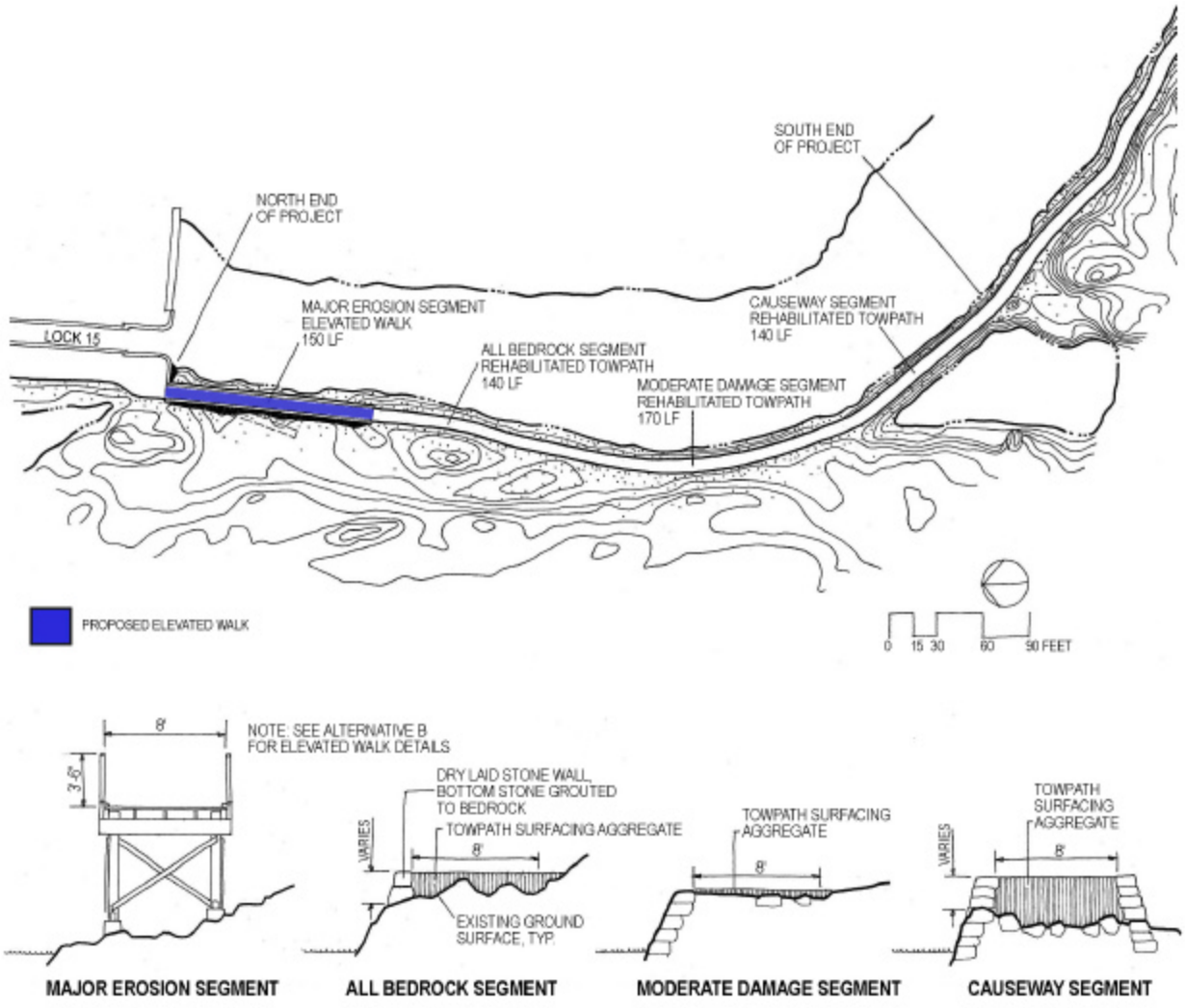

Figure 12: Aerial views and cross-sectional view of Alternative F - One elevated walk segment.

2.7 MITIGATION MEASURES/CONDITIONS OF THE PREFERRED ALTERNATIVE

Mitigation measures or conditions are presented as part of the Preferred Alternative and have been developed to lessen the adverse effects of the Preferred Alternative. The following mitigation measures are recommended for the implementation of the Preferred Alternative:

- Design would incorporate sustainable flood management measures - The design and construction for the proposed action should be consistent with the sustainability objectives, design recommendations, and mitigation measures prescribed in the *C&O Canal National Historical Park Flood Recovery Plan* and subsequent flood related studies conducted by the National Park Service. Flood mitigation is offered through the design process by incorporating engineering methods for protecting the human environment and minimizing storm damage. Structural flood protection measures must be professionally engineered to effectively manage existing flood conditions and hazards.

- Consult with U.S. Army Corps of Engineers and Maryland Department of Environment - The National Park Service would consult with the U.S. Army Corps of Engineers to determine the jurisdiction boundaries of the wetlands adjacent to the towpath construction area. The Maryland Department of the Environment and Corps of Engineers would also be consulted with to determine if the National Park Service should complete a joint permit application if jurisdictional wetlands were impacted. This would be dependent on the wetland boundary determination and the design of the footpath along the Major Erosion Segment. If the area along the Causeway Segment and Major Erosion Segments falls under the Corps' jurisdiction and mitigation is necessary, the National Park Service guidance states wetland restoration would be followed and a minimum of a one-to-one wetland function replacement would occur.

- Maintain hydrology and water quality - The proposed action would be conducted in such a manner to have only negligible effects on the site hydrology, including flow, circulation, velocities, hydroperiods, water level, and fluctuations to minimize potential impacts to adjacent wetlands or wetlands that have a hydrologic connection. In addition, the proposed action would be constructed in a manner that would avoid degrading water quality to the maximum extent possible. Measures would be employed to prevent or controls spills of fuels, lubricants, or other contaminants from entering the waterway or wetland during construction. Contractors should use vegetable-based hydraulic fluid, were possible. Action would be consistent with the state's water quality standards and Clean Water Act Section 401 certification.

- Employ erosion and sediment control measures - Appropriate erosion and siltation controls would be maintained during construction, and all exposed soils or fill material must be permanently stabilized at the earliest practicable date. These mitigation measures would be n accordance with Maryland Department of the Environment standards regarding sediment and erosion control.

- Placement of excavated materials - Whenever possible, excavated materials must be placed on an upland site.

- Minimize shade impacts from structures - The elevated walks should be designed to minimize shade impacts to wetland plants or sites, to the extent possible.

- Post signs to notify visitors - The National Park Service would post signs at the park's visitor centers and along the towpath to inform visitors of the time and duration of towpath closures during construction. Construction work zones would be established for the trail construction and staging area to minimize impacts to the park and the visitor experience. Trail closures and posting of signs should occur well in advance of the daily visitor use to prevent visitors, to the extent possible, from not being able to return via the same route to access their vehicles.

- Best Management Practices - Best Management Practices would be implemented during construction. Soil compaction and vegetation disturbance would be kept to the minimal amount and space required to install the elevated walk and reconstruct the towpath within the original alignment.

  Because of the narrowness of the towpath and the proximity of the undisturbed bedrock terrace forest to the work site, full-sized vehicles, such as dump trucks, front end loaders, etc., would not be used. A temporary ramp/loading area could be possible at either Angler's Inn or the south end of Widewater. Light vehicles, such as bobcats, would operate in this area, but would be confined to the towpath right-of-way. In addition, no trees would be felled other than those growing on the towpath (Lea, 1994).

  Prior to construction, the trees growing on the towpath that are to be cut or pruned would be flagged and consultation would occur with the Natural Resource Managers of the Chesapeake and Ohio Canal National Historical Park (Lea, 1994).

  A regional exotic species team meets with Park staff each year to conduct management of exotic species within the Park. Park staff will meet with the regional exotic species team to determine methods and execute management strategies for control of exotic species in and adjacent to the project area for protection of rare, threatened, and endangered species.

- Rehabilitation of the towpath would be in keeping with the Secretary of the Interior's *Standards for the Treatment of Historic Properties*.

2.8 SUSTAINABILITY

The National Park Service has adopted the concept of sustainable design as a guiding principle of facility planning and development. The objectives of sustainability are to design park facilities to minimize adverse effects on natural and cultural values, to reflect their environmental setting, and to maintain and encourage biodiversity; to construct and retrofit facilities using energy-efficient materials and building techniques; to operate and maintain facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through the

sustainable design and ecologically sensitive use. Essentially, sustainability is living within the environment with the least impact on the environment.

The No-Action Alternative does not support the practice of sustainability because past methods of repairing and stabilizing the towpath and retaining wall do not conform to the objectives of sustainability. The existing eroded towpath adversely impacts the environment and the safety of visitors, park staff, and U.S. Park Police. Part of the objective of this project is to reestablish the towpath in a sustainable and economical way. The Preferred Alternative will subscribe to and support the practice of sustainable planning, design, and use of the towpath through implementing protective measures that will reduce future maintenance effort and costs, while minimizing the adverse effects on the natural and cultural environment.

2.9 CONSTRUCTION COST AND SCHEDULE

The cost of the project is estimated to be $ 1.7 million and construction is projected for FY 2004.

2.10 ALTERNATIVES CONSIDERED BUT DISMISSED

There are no other feasible alternatives that have been considered, therefore, no alternatives were dismissed from further analysis.

2.11 IMPACT COMPARISON MATRIX

Table 1 compares and contrasts each of the alternatives, including the degree to which each alternative accomplishes the purpose or fulfills the need identified in the purpose and need section. Table 2 presents impacts of the project alternatives, including the No-Action Alternative, for comparison purposes, a concise summary of each alternative's potential effects by impact topic.

TABLE 1 : COMPARATIVE SUMMARY OF THE NO-ACTION AND ACTION ALTERNATIVES

Alternative A (No-Action Alternative)	Alternative B (Preferred Alternative)	Alternative C	Alternative D	Alternative E	Alternative F
Under the No-Action Alternative, the National Park Service would not repair the towpath nor would they construct an elevated walk to span the rocky outcrops along the towpath at Widewater. The stone walls would remain in their current condition and loose/missing stones would not be repaired. Bicyclists would continue to be detoured around the Widewater portion of the towpath.	The Preferred Alternative involves constructing an elevated walk over the major Erosion Segment and Causeway Segments, repairing the loose/missing stones along the canal walls, and rehabilitating the towpath with surface aggregate. The alignment closely follows the historic towpath.	Under Alternative C, the National Park Service would construct an elevated walk along all four segments of the towpath. The elevated walk would closely follow the existing alignment, which closely resembles the historic towpath alignment.	Under Alternative D, the National Park Service would rehabilitate the entire towpath using fill and surface aggregate. The design would closely follow the existing alignment. The bicycle detour route would no longer be required.	Alternative E would not follow the existing alignment. The National Park Service would construct an elevated walkway along the detour route as well as the Causeway Segment and rehabilitate the other towpath segments with surface aggregate. Loose and missing stones would be repaired along the canal walls. The bicycle detour route would no longer be required.	Alternative F would construct an elevated walk at the Major Erosion Segment. Loose/missing stones along the canal walls would be repaired and the other towpath sections rehabilitated with surface aggregate. The alignment closely follows the historic towpath.
Meets Project Objectives? No The No-Action Alternative does not meet the purpose and need for the project. It does not prevent loss of cultural and natural resources; protect the health and safety of visitors, park staff, and U.S. Park Police; protect the natural and cultural resources in an aesthetically compatible manner; or improve operation efficiency and sustainability of the park.	**Meets Project Objectives?** Yes Alternative B meets the purpose and need of the project. Alternative B provides a better environmental approach to preventing loss of cultural and natural resources; protecting the health and safety of visitors, park staff, and U.S. Park Police; protects the natural and cultural resources in an aesthetically compatible manner; and improves operation efficiency and sustainability of the park.	**Meets Project Objectives?** No Alternative C meets part of the purpose and need by protecting the health and safety of visitors, park staff, and U.S. Park Police and improving operation efficiency and sustainability, but it would not prevent the loss of cultural and natural resources.	**Meets Project Objectives?** No Alternative D would prevent the loss of cultural and natural resources, but it would not provide adequate safety and security. It would be prone to flooding, and it would not improve operation efficiency and sustainability.	**Meets Project Objectives?** No Alternative E would provide a safe surrounding as it would not be prone to flooding; however, it would not prevent the loss of cultural and natural resources.	**Meets Project Objectives?** No Alternative F would not improve the operational efficiency and sustainability of the park.

TABLE 2: COMPARATIVE SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

Impact Topic	Alternative A No-Action Alternative	Alternative B (Preferred Alternative)	Alternative C	Alternative D	Alternative E	Alternative F
Historic Structures	Impacts would be moderate, long-term, and adverse. No impairment to park resources or values would occur.	Moderate, long-term, beneficial impacts would occur. No cumulative impacts would occur. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Minor, long-term, adverse impacts would occur. No cumulative impacts would occur. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Minor, long-term, beneficial impacts would occur. No cumulative impacts would occur. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Moderate, long-term, adverse impacts would occur. No cumulative impacts would occur. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Minor, long-term, beneficial impacts would occur. No cumulative impacts would occur. No impairment to park resources or values would occur. Mitigation measures would be implemented.
Floodplains	No floodplain impacts would occur under the No-Action Alternative. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur from construction in the regulated floodplain. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Impacts would be minor, long-term, and adverse. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Minor, long-term, adverse impacts would occur No impairment to park resources or values would occur. Mitigation measures would be implemented.	Impacts would be minor, long-term, and adverse. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Impacts would be minor, long-term, and adverse. No impairment to park resources or values would occur. Mitigation measures would be implemented.
Wetlands	No wetland impacts would occur under the No-Action Alternative. No impairment to park resources or values would occur.	Minor, long-term, adverse impact and minor, short-term, adverse impacts would occur. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Impacts would be minor, long-term, and adverse. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Impacts would be minor, long-term, and adverse. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Impacts would be minor, long-term, and adverse. No impairment to park resources or values would occur. Mitigation measures would be implemented.	Impacts would be minor, long-term, and adverse. No impairment to park resources or values would occur. Mitigation measures would be implemented.

Impact Topic	Alternative A No-Action Alternative	Alternative B (Preferred Alternative)	Alternative C	Alternative D	Alternative E	Alternative F
Land Cover and Vegetation	No impacts to land cover or vegetation would occur under the No-Action Alternative. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.
Aesthetics and Visual Resources	No impacts to aesthetics or visual resources would occur under the No-Action Alternative. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.	Moderate, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.	Minor, long-term, adverse impacts would occur. There would be cumulative impacts. No impairment to park resources or values would occur.
Safety	Under the No-Action Alternative, impacts on safety would be moderate, long-term, and adverse.	Minor, long-term, beneficial impact on safety would occur. Beneficial cumulative impacts would occur. No impairment to park resources or values would occur. Mitigation measures would be implemented.				
Visitor Use and Experience	Moderate, long-term, adverse impacts would continue to impact the visitor experience and use. No impairment to park resources or values would occur.	Moderate, long-term, adverse impacts would continue to impact the visitor experience and use. No impairment to park resources or values would occur. Mitigation measures would be implemented.				

2.12 ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with Director's Order # 12, the National Park Service is required to identify the "environmentally preferred alternative" in all environmental documents, including Environmental Assessments. The environmentally preferred alternative is determined by applying the criteria suggested in National Environmental Policy Act of 1969, which is guided by the Council on Environmental Quality. The Council on Environmental Quality provides direction that "[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in Section 101 of the National Environmental Policy Act, which considers:

1. Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;

2. Assuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;

3. Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;

4. Preserving important historic, cultural, and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;

5. Achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and

6. Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources (National Environmental Policy Act, Section 101)."

The No-Action Alternative (Alternative A) does not meet any of the criteria for the environmentally preferred alternative. Alternative B provides a better environmental and cultural approach than all the other alternatives, including the following advantages:

- Preventing loss of cultural and natural resources (Criteria 1 and 4);

- Protecting the health and safety of visitors, park staff, and U.S. Park Police and protecting the natural and cultural resources in an aesthetically compatible manner (Criterion 2); and

- Improving operational efficiency and sustainability (Criteria 3, 5, and 6).

Alternative C does not prevent the loss of cultural and natural resources because it would introduce a new continuous structure that would alter the historic character. It would protect the health and safety of visitors, park staff, and U.S. Park Police and it would improve operation efficiency and sustainability (Criterion 2).

Alternative D would not provide adequate safety and security, it would be prone to flooding, and it would not improve operation efficiency and sustainability. However, it would prevent the loss of cultural resources (Criterion 4).

Alternative E would provide a safe surrounding because it would not be prone to flooding (Criterion 2). It would not prevent the loss of cultural and natural resources because it would introduce improvements not in keeping with the historic character-defining features of the canal (Criteria 1 and 4).

Alternative F would not improve operational efficiency and sustainability (Criteria 3, 5, and 6).

Therefore, the National Park Service's Preferred Alternative, Alternative B (two elevated walk segments) is the environmentally preferred alternative. After review of potential resources and other impact topics, and developing appropriate mitigation measures, the Preferred Alternative best ensures the preservation of park resources and values. Alternative B would alleviate impacts to the cultural and natural resources and reestablish a safe and continuous towpath for visitors, park staff, and U.S. Park Police near Widewater and Lock 15. Alternative B would contribute directly to supporting the Chesapeake and Ohio Canal National Historical Park's mission by protecting and preserving the park's cultural and natural resources, educating the public about those resources, and providing for public recreation and enjoyment. It would also subscribe to sustainable planning, design, and use of the towpath.

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3.0 AFFECTED ENVIRONMENT

A summary of the resources identified as impact topics associated with this project follows.

3.1 SAFETY

There are two primary concerns with safety along the Widewater portion of the towpath. First, existing rocky conditions make walking on the path difficult and hazardous. Visitors have to carry bicycles over all four segments of the towpath. The rocky conditions can be unstable, slippery when wet, and bumpy, which increases the risk of injury from falling especially because of the hard bedrock surface. Visitors may not be equipped or capable of crossing this area because the towpath conditions are inconsistent with other portions of the trail leading up to Widewater. No handicap accessibility is available. The National Park Service has posted signs and publicized the trail conditions on the web and, on available mapping, which forewarn visitors using the trail.

The second safety issue has to do with the detour route leading to Berma Road. Visitors have to carry their bicycles up and down a steep set of stairs, and up steep terrain on the south side of the detour to access Berma Road. Safety provisions have been made to the set of stairs on the south side of the detour route to allow visitors to rest their bicycles on a runner board when going up/down the stairs. Overall, the detour route can be much more strenuous for visitors who may be expecting the level towpath.

3.2 CULTURAL RESOURCES

Cultural resources for the purposes of this Environmental Assessment are further characterized as historic structures/sites, archeological resources, and cultural landscapes.

"Historic properties," as defined by the implementing regulations of the National Historic Preservation Act (36 CFR 800), are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. This term includes artifacts, records, and the remains that are related to and located within such properties, as well as traditional and culturally significant Native American sites and historic landscapes. The term "eligible for inclusion in the National Register" includes both properties formally determined eligible and all other properties that meet National Register listing criteria.

The significance of historic properties is generally judged against a property's ability to meet the four criteria for inclusion on the National Register of Historic Places (36 CFR 60):

- Association with events that have made a significant contribution to the broad patterns of our history; or

- Association with the lives of persons significant in our past; or

- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

- That has yielded, or may be likely to yield, information important in prehistory or history.

Properties may be eligible for the National Register for contributions at the national, state, or local level. Ordinarily, properties achieving significance within the last 50 years are not considered eligible unless they are integral parts of historic districts or unless they are of exceptional importance; the most common types of properties less than 50 years old listed on the National Register are works of modern architecture or scientific facilities. Additionally, in order for a structure or building to be listed in the National Register, it must possess historic integrity of those features necessary to convey its significance (i.e., location, design, setting, workmanship, materials, feeling, and association see National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation).*

3.2.1 HISTORIC STRUCTURES/SITES

The Widewater area represents one of the most hydraulically complex sections of the Chesapeake and Ohio Canal. The rocky and uneven nature of the towpath in this area is attributed in part to decisions made by canal builders in the 1820's.

Engineers designing the canal elected to utilize a dry river channel to minimize necessary blasting through boulders in a nearly one-mile segment at Bear Island, near the settlement of Cropley and downstream from Lock Number 15. An 1831 inspection report noted a slope wall of dry masonry as high as 40 feet in some places, was designed:

> "not only to sustain the pressure to which it is exposed, but also because it was the most convenient and economical way of disposing of the vast quantities of stone which had to be blasted out of the path of the canal in its vicinity. (NPS, 1984)"

Since early 1970, the National Park Service has tried to accurately restore the alignment and appearance of the towpath, provide for towpath continuity and visitor safety, and comply with legislative policy and planning mandates. In 1970, the National Park Service received funding to restore the towpath in the Widewater area. From the beginning of construction, there was considerable criticism and public outcry for the restoration project. Some of the issues of concern included the impact to the natural and historical resources in this area from the use of bulldozers to clear a new road. Construction was halted and the rocky area between the causeway and Lock 15 was left untouched (NPS, 1984).

Following the 1970 controversy, Hurricane Agnes devastated the area, washing away the existing towpath in several areas and breaking a large wall on the downstream end of Widewater. Subsequent repairs restored most of the damage at Widewater, but the towpath was never completely restored along the rocky area below Lock 15.

In 1971, a General Management Plan for the park was developed. The plan called for the towpath and associated structures to be restored as nearly as possible to their historic character. Until the towpath could be restored, plans for an elevated walkway were proposed for the areas below Lock 15. Construction began in 1976, but was again halted due to public outcry. Eighty feet of the bridge had been completed, but the plans to extend the remaining part of the bridge were completely halted (NPS, 1984).

In 1984, the National Park Service revisited the restoration of the towpath. The National Park Service incorporated input from concerned individuals and groups and completed a historic assessment document that outlined the restoration process in advance of what on-site construction was to be done.

Since 1984, the only work completed in the Widewater area included redecking at the bridge at Lock 15 and the placing of fill material at the stop gate. The major towpath work required after the 1996 flood occurred downstream of the Widewater area (personal communication, 2002).

Parts of the Widewater area are contributing elements to the National Register nomination (NPS, 1979). These features include:

- Mile 12-13, Canal Prism, Milepost 12 (Built 1828-1833)
- Mile 12-13, Towpath, Milepost 12 (Built 1828-1833)
- Widewater, Milepost 12.62-13.45 (adapted for use as canal 1830)
- Mile 13-14, Canal Prism, Milepost 13 (Built 1828-1833)
- Mile 13-14, Towpath, Milepost 13 (Built 1828-1833)
- Wasteweir, milepost 13.01 (built 1835; reconstructed 1975) stone and concrete *[Wasteweirs were structures designed to regulate the flow of water in sections of the canal, operated by raising and lowering planks]*
- Brick and Stone Ruins near Woodland Trail, milepost 13.10 (likely related to mining activity, c. 1857-1950)(Determined eligible by the State Historic Preservation Officer) approximately 3' x 4' stone and brick foundation with characteristics of a forge
- Lock #15, milepost 13.45 (Built 1830 by A. Knapp & Co.; rebuilt 1871-1877; stabilized 1939-1942; repaired by National Park Service 1975, Seneca red sandstone and granite with modern wooden gates)
- Bypass Flume Lock # 15, milepost 13.45A (Built 1830 by A. Knapp & Co.) Stone and concrete with wooden cribbing (Bypass flumes allowed a continuous flow of water in the canal, even when the lock was not in use)

3.3 FLOODPLAINS

Based on the review of the Flood Insurance Rate Map for Montgomery County, Maryland, dated August 1, 1984, the Widewater area of the Chesapeake and Ohio Canal lies within a regulated 100-year floodplain. The area is designated as Zone A, which indicates that no based flood elevations are determined. The Chesapeake and Ohio Canal Historic Park has been damaged by a number of flood events in the past. The most recent and significant flood event occurred in 1996. Damage from the flood was estimated at $68 million. The *C&O Canal National Historical Park Flood Recovery Plan* was completed by the National Park Service and established a program for repair needs and schedule for implementation (NPS, 1997). The towpath at Widewater was identified in the *Flood Recovery Plan* as a priority area. A Statement of Findings for Floodplain Management was not prepared for this project because minor path

repairs and sites with historic significance typically qualify as an excepted action (*National Park Service Procedural Manual #77-2,* 2001, p. 7). In addition, the repairs to the towpath were identified as part of the *Flood Recovery Plan*. The proposed action must still comply with conditions set forth in Executive Order 11988 "Floodplain Management" and the National Park Service Director's Order #77.

3.4 WETLANDS

For the purposes of implementing Executive Order 11990: "Wetland Protection", the National Park Service has determined that any area classified as a wetland habitat according to the U.S. Fish and Wildlife Service's *Classification of Wetlands and Deepwater Habitats of the United States* is subject to Director's Order #77-1 and the implementation procedures outlined in the *Procedural Manual #77-1: Wetland Protection.*

Based on the review of the National Wetland Inventory mapping, soil surveys, and site inspection, a number of areas within or adjacent to the project area are designated as wetland habitats in accordance with the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual. A brief description of those wetlands that potentially could be affected directly or indirectly by the proposed actions is provided. The location of each wetland is shown in Figure 13.

Wetland North of Major Erosion Segment – The National Wetland Inventory depicts a wetland approximately 500 feet to the north of the Major Erosion Segment. This wetland is not adjacent to the proposed project area, but appears to have a hydrologic connection to the C&O Canal. Water from this wetland seeps under the elevated walk on the Major Erosion Segment into the canal. Based on the field review and National Wetland Inventory, the wetland habitat is a Palustrine Scrub-Shrub Broad-Leaved Deciduous Seasonally Flooded/Saturated (PSS1E) wetland. The Palustrine System includes all nontidal wetlands dominated by trees, shrubs, emergent vegetation, mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand (USFWS, 2002b). Detailed field investigation of this wetland was not conducted for this study. This wetland is not near the proposed construction footprint; however, the wetland is described because of the potential hydrological connection to the C&O Canal under the elevated walk. This wetland is labeled # 1 in Figure 13.

This wetland provides many beneficial functions such as wildlife habitat, improved water quality, nutrient uptake and recycling, and reduction of suspended solids from entering the canal. Scrub-Shrub wetland provides habitat to many mammals, birds, and reptiles. As wetland vegetation grows, it takes up inorganic forms of nutrients such as nitrogen and phosphorus. The reduction of nutrients is important to maintain water quality of the canal, prevent algae blooms, and control nuisance vegetation populations. Wetlands also help to improve water quality by reducing suspended solids entering water systems as a result of bank erosion. Overall, the value for this wetland is excellent.

Wetland Adjacent to Major Erosion Segment – A palustrine wetland exists to the north and adjacent to the Major Erosion Segment. The wetland is approximately 0.5-acre in size and is not

shown on the National Wetland Inventory. The wetland appears to have been created from a small rocked dam near Lock 15 that causes water to saturate a small depression between the towpath and higher elevation land on Bear Island. According to the Cowardin Classification System, the wetland habitat is a Palustrine Emergent Seasonally Flooded Diked/Impounded (PEMCh) wetland. This wetland is labeled # 2 in Figure 13.

Palustrine systems have been described previously. Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses, and lichens. This vegetation is present for the majority of the growing season in most years. These wetlands are usually dominated by perennial plants. The water regime, Seasonally Flooded, indicates that surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface, to a water table well below the ground surface (USFWS, 2002b).

The wetland has 100 percent aerial coverage of herbaceous vegetation. Species included mostly cattail (*Typha latifolia*); however, black willow (*Salix nigra*), duckweed (*Lemna spp.*), jewelweed (*Impatiens capensis*), juncus (*Juncus sp.*), azolla (*Azolla caroliniana*), and smartweed (*Polygonum sp.*) were also present.

This wetland provides many beneficial functions such as wildlife habitat, water quality, nutrient uptake and recycling, and reduction of suspended solids from entering the canal. An herbaceous wetland provides habitat to many mammals, birds, and reptiles. As wetland vegetation grows, the plants take up inorganic forms of nutrients such as nitrogen and phosphorus. The reduction of nutrients is important to maintain water quality of the canal and to prevent algae blooms and nuisance vegetation from invading the canal. Wetlands also help to improve water quality by reducing suspended solids from bank erosion. Overall, the value for this wetland is good.

Wetland adjacent to Causeway Segment - The Causeway Segment was created in the past from fill material. The causeway runs between the canal and a palustrine wetland system. The National Wetland Inventory classifies the wetland habitat as a Palustrine Unconsolidated Bottom Permanently Flooded Diked/Impounded (PUBHh) wetland. This area is approximately 0.5-acre in size. The modifier "diked" was given because a larger earthen/rock dam exists on the southwest side of the wetland. The site is permanently flooded and mostly open water; however, because of the size of the system, the habitat is classified as palustrine, but displays many of the same characteristics of the canal, which is lacustrine (USFWS, 2002b). This wetland is labeled # 3 in Figure 13.

This water body is connected to the canal by a 36-inch corrugated metal pipe on the south end of the causeway segment. Little to no vegetation exists in the water body. A combination of wetland herbaceous plants and trees exist on the causeway between the canal and PUBHh wetland. These plant species are described in the Land Cover and Vegetation section.

The primary function of this PUBHh wetland is flood storage and wildlife habitat for mammals, fish, waterfowl, and wading birds. Blue heron and small deer were noted at the time of the field inspection. The open water area of this wetland habitat provides food, shelter, and nesting sites for wading birds, waterfowl, and fish and a watering hole for many mammals such as deer. The wetland area also provides storage during flood events.

C&O Canal – The National Wetland Inventory classifies the C&O Canal as a Lacustrine Limnetic Unconsolidated Bottom Permanently Flooded Excavated (LUB1Hx) wetland. Lacustrine systems include wetland and deepwater habitats that are (1) situated in a topographic depression or dammed by a river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30 percent aerial coverage; and (3) the total area exceeds 20 acres. The canal has an unconsolidated bottom meaning at least a 25 percent cover of particles smaller than stones and a vegetative cover of less than 30 percent. The canal is permanently flooded throughout the year and the last modifier within the Cowardin Classification indicates the canal was excavated by man (USFWS, 2002b). This wetland is labeled # 4 in Figure 13. Based on field inspection, the characteristics of the C&O Canal just south of Lock 15 are consistent with the description from the National Wetland Inventory. The C&O Canal has many functions such as flood storage; habitat for waterfowl, reptiles, fisheries; food/water source for mammals and birds; and water quality.

A Statement of Findings for Wetland Protection was not prepared for this project because minor path repairs and sites with historic significance typically qualify as an excepted action based on the *Procedural Manual 77-1*. The proposed action must still comply with conditions of Executive Order 11990 *Wetland Protection* and Director's Order # 77-1 *Wetland Protection*. Wetland delineations according to the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual were not conducted for any of the wetlands described in this study. Exact acreages of the wetlands and potential impacts were estimated from mapping and field visits. The scope of this study used a qualitative approach, including a visual assessment by a qualified scientist(s) to verify the wetland habitat types and to determine the wetland functions.

3.5 LAND COVER AND VEGETATION

Virginia pine (*Pinus virginica*) is the dominant species in the Rock outcrop-Blocktown complex soil type (NRCS, 1995). The vegetation along the towpath in the project area is dominated by hardwood species such as red oak (*Quercus rubrum*), post oak (*Quercus stellata*), hickory (*Carya sp.*), red maple (*Acer rubrum*), black locust (*Robinia pseudoaccacia*), pawpaw (*Asimina triloba*), green ash (*Fraxinus pennsylvanica*), and sycamore (*Platanus occidentalis*). Virginia pine and Eastern red cedar (*Juniperus virginiana*) are common. Along the edge of the towpath are forbs such goldenrod (*Solidago sp.*), New England aster (*Symphyotrichum novae-angliae*), and blackberry (*Rubus sp.*). Vines such as Japanese honeysuckle (*Lonicera japonica*), greenbriar (*Smilax spp.*), poison ivy (*Rhus toxicodendron*), Virginia creeper (*Parthenocissus quinquefolia*), and wild grape (*Vitis sp.*) grow along the edge of the towpath and on adjacent trees. Bedrock terrace forest occurs downslope from the towpath, between the towpath and the Potomac River. It is characterized by boulders and outcrops with coarse woody debris on the forest floor. It remains moist and shady during the summer and fall, creating a cool microclimate with a diverse herbaceous layer.

3.6 AESTHETICS AND VISUAL RESOURCES

The Widewater area of the Chesapeake and Ohio Canal National Historical Park provides visitors with scenic vistas of the Potomac River basin and historic canal. Vistas to and from the towpath typically include the diverse deciduous forest, wetlands, native wildflowers, and

bedrock outcrops. The open water areas of the canal at Widewater offer visitors a scenic reflective pool for the rocky outcrops along the berm side of the canal (side opposite of the towpath). In addition to the natural features, the canal infrastructure such as the locks and dams provide an historic element to the scenery enjoyed by visitors. The existing site conditions as well as photographs of the towpath, Lock 15, and surrounding natural setting and infrastructure are described in detail at the beginning of this document.

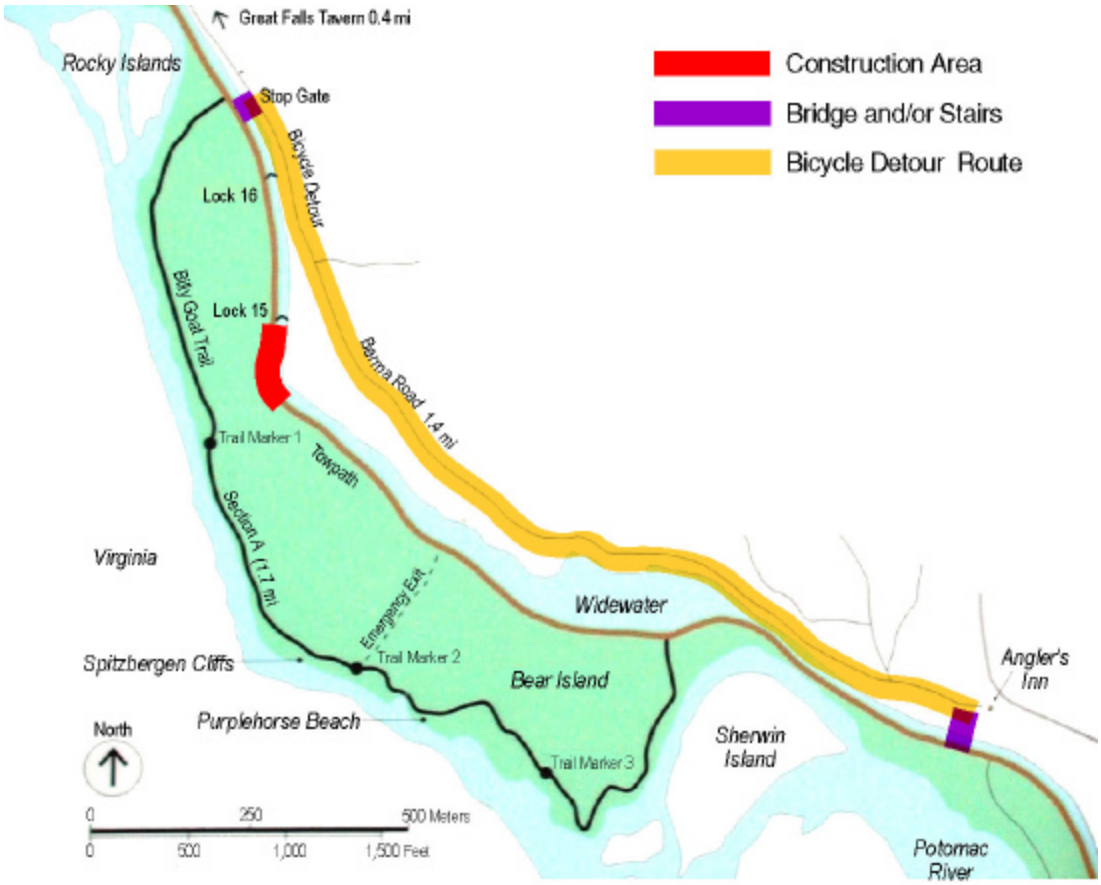
3.7 VISITOR USE AND EXPERIENCE

The canal's towpath provides a nearly level, continuous trail through the Potomac River Valley from Washington, D.C., to Cumberland, Maryland. Every year millions of visitors come to hike or bike the C&O Canal in order to enjoy the natural, cultural, and recreational opportunities available. The Chesapeake and Ohio National Historical Park includes 19,236 acres of parkland paralleling the Potomac River from the densely urbanized Washington, D.C., upriver, for 184.5 miles through pastoral farm country and forest, to Cumberland, Maryland. Many of the park's visitors come here to enjoy the outdoors, access the river, hike, bike, jog, ride horses, and observe wildlife (NPS, 2002g).

The Widewater/Great Falls area is the most heavily used sections of the canal. Park patrons who wish to visit the Widewater section of the trail and Great Falls scenic area typically park in designated paved parking by the Tavern Visitor Center on the north side of the trail. The parking at the Visitor Center provides easy access to the trail. On the south side of the Widewater Area, the designated parking area is just below Angler's Inn. This parking area is not paved and consists of two parking areas at different elevations. The parking near the Angler's Inn is approximately a quarter of a mile down the slope to the C&O towpath.

Generally, the towpath is in excellent condition; however, a section in Widewater is one of a few areas along the towpath where bicycle access is limited by the towpath's condition. Within the project area, around mile marker 13.5, there is about 200 yards of rocky outcrops, which requires visitors to carry their bikes up or down stairs just north of Lock 16. An optional bike detour (Berma Road) is available between mile markers 12.6 and 13.7 to circumvent the towpath at Lock 15. This is a dirt road and access is only available to National Park Service and Washington Aqueduct vehicles. The National Park Service has installed signs directing visitors at both ends of the canal to the bicycle detour route.

In addition, more serious hikers can use the Billy Goat Trail on Bear Island, which provides a separate hiking experience for visitors to the Widewater area. Some of the sections of the Billy Goat Trail are strenuous and involve climbing; therefore, it is not accessible to bikes, dogs, and or persons with disabilities. Figure 14 depicts the Billy Goat Trail and Bicycle Detour.


Great Falls Tavern 0.4 mi
Rocky Islands
Stop Gate
Bicycle Detour
Lock 16
Billy Goat Trail
Lock 15
Trail Marker 1
Towpath
Section A (1.7 mi)
Virginia
Emergency Exit
Trail Marker 2
Spitzbergen Cliffs
Purplehorse Beach
Bear Island
Trail Marker 3
Widewater
Sherwin Island
Angler's Inn
Potomac River
Berma Road 1.4 mi
Construction Area
Bridge and/or Stairs
Bicycle Detour Route
North
0
250
500 Meters
0
500
1,000
1,500 Feet

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This section describes the environmental consequences associated with each alternative to the proposed action. It is organized by impact topics, which refine the issues and concerns into distinct topics for discussion analysis. These topics allow a standardized comparison between the alternatives based on their impact to the environment. A comparison matrix is provided in Section 2.11 for easy reference of the impact topics. The National Environmental Policy Act of 1969 requires consideration of context, intensity, and duration of direct, indirect, and cumulative impacts plus measures to mitigate the impacts. National Park Service policy also requires that "impairment" of park resources be evaluated in all environmental documents.

4.2 METHODOLOGY FOR ASSESSING IMPACTS AND IMPAIRMENT TO PARK RESOURCES AND VALUES

Potential impacts are described in terms of type (are the effects beneficial or adverse?), context (are the effects site-specific, local, or even regional?), duration (are the effects short-term, lasting less than one year, or long-term, lasting more than one year?), and intensity (are the effects negligible, minor, moderate, or major?). Because definitions of intensity vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this environmental assessment.

In addition, the National Park Service's *Management Policies, 2001* (2000) require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and as appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is the integrity of park resources or values. An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;

- Key to the natural or cultural integrity of the park; or

- Identified as a goal in the park's general management plan or other relevant National Park Service planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. A determination on impairment is made for each impact topic in this section.

4.2.1.1 CUMULATIVE EFFECTS

The Council on Environmental Quality regulations, which implement the National Environmental Policy Act, requires assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives and are presented at the end of each impact topic discussion analysis.

Cumulative effects were determined by combining the impacts of the proposed action with other past, present, and reasonable foreseeable future actions. Therefore, it was necessary to identify other ongoing or foreseeable future projects at the Chesapeake and Ohio Canal and, if necessary, the surrounding region. A list of foreseeable projects identified as part of this evaluation was provided earlier in this document and when applicable, discussed under each impact topic.

4.2.1.2 MITIGATION MEASURES

Mitigation measures are described at the end of each impact topic when appropriate. Mitigation measures are designed to offset or minimize the effects of the proposed action. If no or negligible impacts are anticipated, mitigation measures may not be included for the alternative.

4.3 IMPACTS ON SAFETY

4.3.1.1 DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of impacts on safety were derived from the available information on the Chesapeake and Ohio Canal National Historical Park, and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on safety are defined as follows:

- *negligible*, public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on the public health or safety.

- *minor*, the effect would be detectable and would likely be short-term, but would not have an appreciable effect on public health and safety. If mitigation were needed, it would be relatively simple and would likely be successful.

- *moderate*, the effects would be readily apparent and long-term and would result in substantial, noticeable effects to public health and safety on a local scale. Mitigation measures would probably be necessary and would likely be successful.

- *major*, the effects would be readily apparent and long-term, and would result in substantial, noticeable effects to public health and safety on a regional scale. Extensive mitigation measures would be needed and their success would not be guaranteed.

4.3.1.2 ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the towpath at Lock 15 would not be rehabilitated and the retaining wall would not be stabilized. These conditions would continue to add to the risk of accidents involving pedestrians and bikers using the towpath near Widewater. The risk to users are caused by unsafe conditions, including rocky outcrops, eroded and uneven bedrock surfaces, and unstable dry laid stone walls along the canal. These unsafe conditions would result in moderate, bng-term, adverse impacts to the safety of visitors using the Widewater area of the Chesapeake & Ohio Canal National Historical Park, including those with disabilities.

Cumulative Impacts. A variety of past, present, and reasonably foreseeable actions have and may continue to affect the safety of the visitors to the Chesapeake and Ohio Canal National Historical Park at Lock 15. The No-Action Alternative, when added to other past, present, and reasonably foreseeable future projects or events, would have a moderate, adverse, cumulative impact. Future flood events would continue to erode the towpath and retaining wall, adding to the risk of trail failure and impacts to visitor safety, contributing to cumulative impacts.

Conclusion. Impacts to the visitor safety near Lock 15 under the No-Action Alternative would be moderate, long-term, and adverse. The No-Action Alternative would contribute to cumulative adverse effects on safety of the visitors. No impairment to park resources or values would occur.

4.3.1.3 ALTERNATIVES B, C, D, E, AND F

The impacts on safety are virtually the same for the Preferred Alternative and other action alternatives. The towpath would be repaired so that visitors have a safe, level towpath or elevated walk to cross areas that currently present hazardous and unsafe conditions because of rocky outcrops. In addition, bicyclists would no longer be required to carry their bikes across this portion of the towpath or to use the bicycle detour route. The bicycle detour route also requires users to carry their bikes up and down steep stairs, go across bridges, and up a steep terrain to access the more level Berma Road. The detour is also more strenuous to visitors when compared to the level towpath that many of the visitors come to use. In general, the proposed repairs would reduce the risk of injury caused by the existing slippery, rocky conditions and steep stairs. For these reasons, the rehabilitation of the towpath would have a minor, long-term, beneficial impact on visitor safety.

Cumulative Impacts. A variety of past, present, and reasonably foreseeable actions have and may continue to affect the safety of the visitors to the Chesapeake and Ohio Canal at Lock 15. These actions, when added to other past, present, and reasonably foreseeable future projects or events, would have a moderate, beneficial, cumulative impact. Future flood events would continue to erode the towpath and retaining wall, adding to the risk of trail failure and impacts to visitor safety, contributing to cumulative impacts.

Conclusion. Impacts to the visitor's safety at Widewater, under the Preferred Alternative and other action alternatives, would be minor, long-term, and beneficial because the towpath and elevated walks would provide visitors with a level, more stable towpath and/or walk. These improvements would reduce the risk of injury caused by slippery, rocky conditions or steep stairs, which currently exist. These alternatives would contribute to cumulative beneficial effects on the safety of visitors.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The design and construction for the proposed action should be consistent with the sustainability objectives, design recommendations, and mitigation measures prescribed in the *Flood Recovery Plan* and subsequent flood related studies conducted by the National Park Service. Flood mitigation is offered through the design process by incorporating engineering methods for protecting the human environment and minimizing storm damage. Structural flood protection measures must be professionally engineered to effectively manage existing flood conditions and hazards and to provide for the safety of visitors, park rangers, and the U.S. Park Police.

4.4 IMPACTS TO CULTURAL RESOURCES AND SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

Section 101(b)(4) of the National Environmental Policy Act of 1969 (P.L. 91-190), as amended, requires the federal government to coordinate and plan its actions to, among other goals, "preserve important historic, cultural and natural aspects of our national heritage...." The Council on Environmental Quality's implementing regulations require that federal impacts to historic and cultural resources be included as part of the National Environmental Policy Act process.

In this environmental assessment, impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality that implement the National Environmental Policy Act. These impact analyses are intended, however, to comply with the requirements of both the National Environmental Policy Act and Section 106 of the National Historic Preservation Act. In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the National Historic Preservation Act (36 CFR Part 800, Protection of Historic Properties), impacts to cultural resources were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effects to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of either adverse effect or no adverse effect must also be made for affected, National Register eligible cultural resources. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register, (e.g. diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the proposed action that would occur later in time, be farther removed in distance, or be cumulative (36 CFR Part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualifies it for inclusion in the National Register.

Examples of adverse effects "include, but are not limited to: (i) Physical destruction of or damage to all or part of the property; (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines; (iii) Removal of the property from its historic location; (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance; (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features; (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and (vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance." (36 CFR 800.5)

4.4.1 IMPACTS ON HISTORIC STRUCTURES/SITES

4.4.1.1 DEFINITION OF INTENSITY LEVELS

In order for a structure or site to be listed in the National Register of Historic Places, it must meet one or more of the following criteria of significance: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; or D) have yielded, or may be likely to yield, information important in prehistory or history. In addition, the structure or site must possess integrity of location, design, setting, materials, workmanship, feeling, or association (*National Register Bulletin, How to Apply the National Register Criteria for Evaluation*). For purposes of analyzing potential impacts to historic structures/sites, the thresholds of change for the intensity of an impact are defined as follows:

- *negligible*, Impact(s) is at the lowest levels of detection - barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no adverse effect*.

- *minor*, Adverse impact - impact would not affect the character defining features of a National Register of Historic Places eligible or listed structure or building. For purposes of Section 106, the determination of effect would be *no adverse effect*.

  Beneficial impact - stabilization/preservation of character defining features in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.* For purposes of Section 106, the determination of effect would be *no adverse effect*.

- *moderate*, Adverse impact - impact would alter a character defining feature(s) of the structure or building, but would not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized. For purposes of Section 106, the determination of effect would be *no adverse effect*.

  Beneficial impact – rehabilitation of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

- *major*, Adverse impact - impact would alter a character defining feature(s) of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.

  Beneficial impact – restoration of a structure or building in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. For purposes of Section 106, the determination of effect would be *no adverse effect*.

The National Park Service has initiated consultation with the Maryland Historical Trust regarding this project. In a letter dated, July 23, 2002, the Maryland Historical Trust, "concurs with the National Park Service's general concepts for the undertaking." (see Appendix B)

4.4.1.2 ALTERNATIVE A: NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the towpath alignment and existing towpath conditions would remain and the canal stone walls would not be repaired. Erosion and continued deterioration of historic fabric would cause an adverse impact to historic resources of the Widewater area that would be moderate and long-term. Unsafe, unsightly, and non-historic landscape features would remain.

Cumulative Impacts. Past, ongoing and future projects occurring near Widewater would not impact the historic structures in the project area and would not add to impacts caused by the No-Action Alternative; therefore, in combination with this alternative, there would be no cumulative impact.

Conclusion. If corrective actions are not taken to rehabilitate the towpath at Widewater, moderate, long-term, adverse impacts to historic structures would occur. No cumulative impacts to historic structures would occur. There would be no impairment to park resources or values.

4.4.1.3 ALTERNATIVE B (PREFERRED ALTERNATIVE)

Under the Preferred Alternative, two new partial elevated walks would be constructed and the existing elevated walk removed. This would be more in character with what was constructed in the 1820's. However, as a result, two new structures would be added to the view near Lock 15. The design would try to incorporate massing, scale, and materials reflective of or consistent with the site surroundings. Aggregate would be used for these segments.

Elevated walkways in the Major Erosion and Causeway segments of Widewater would provide protection to the historic towpath and maintain its traditional alignment. This would also present the opportunity through waysides to interpret the story of Widewater and man's continual battles with the river. Evidence remaining in the rocks and walls suggests the Canal Company used elevated walkways in these sections. Dry stone masonry techniques would be used in repairing the towpath. This would provide a moderate, long-term, beneficial impact as the rehabilitation of the towpath would be in keeping with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

Cumulative Impacts. Past, ongoing and future projects occurring near Widewater would not impact the historic structures in the project area and would not add to the impacts caused by Alternative B. Therefore, there would be no cumulative impacts to historic structures.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of the Preferred Alternative would have *no adverse effect* on historic properties. The historic resources would be rehabilitated in keeping with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

Conclusion. The introduction of two elevated walks would have moderate, long-term, beneficial impacts to historic structures. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Rehabilitation of the towpath would be in keeping with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

4.4.1.4 ALTERNATIVE C

Under Alternative C, one elevated walk would be constructed across all four segments of the towpath and the existing elevated walk would be removed. This alternative would alter the historic character of the towpath by introducing a new continuous structure. The impact would be minor, long-term, and adverse. There is no evidence to suggest a continuous elevated walkway existed throughout the length of Widewater during the operating days of the canal.

Cumulative Impacts. Past, ongoing and future projects occurring near Widewater would not impact the historic structures in the project area and would not add to the impacts caused by Alternative C. Therefore, there would be no cumulative impacts to historic structures.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of the Alternative C would have *an adverse effect* on historic properties because there is no evidence to suggest an elevated walkway existed throughout the length of Widewater during the operating days of the canal. Therefore, a Memorandum of Agreement with the Maryland Historical Trust would be prepared to address how the adverse effect would be mitigated.

Conclusion. The introduction of a longer elevated walk would have a minor, long-term, adverse impact to historic structures. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The National Park Service would have to enter into a Memorandum of Agreement with the Maryland Historical Trust to mitigate impacts to historic structures.

4.4.1.5 ALTERNATIVE D

Under Alternative D, the towpath would be reestablished using surface aggregate and fill, which would more closely resemble other sections of the towpath. The continuous towpath would maintain the historic alignment within the canal prism; however, there is no evidence to suggest a continuous at grade towpath existed in this area of Widewater. The engineering and construction required to solidify the towpath would require a practical reconstruction of existing features. Gabions and other engineering features would be designed to be minimally obtrusive. Structures such as stone walls would not be constructed in places where they did not exist historically. Therefore, the impacts under Alternative D would minor, long-term, and beneficial. Rehabilitation of the towpath would be in keeping with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.*

Cumulative Impacts. Past, ongoing and future projects occurring near Widewater would not impact the historic structures in the project area and would not add to the impacts caused by Alternative D. Therefore, there would be no cumulative impacts to historic structures.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of Alternative D would have *no adverse effect* on historic properties. The historic resources would be rehabilitated in keeping with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*.

Conclusion. The reestablishment of the towpath using surface aggregate and fill would have a minor, long-term, beneficial impact to historic structures. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Rehabilitation of the towpath would be in keeping with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.*

4.4.1.6 ALTERNATIVE E

Under Alternative E, two new elevated walks would be constructed and the existing elevated walk removed. One of the walks would be constructed along a detour route which is further away from the canal. Two new structures would be added to the viewshed of the Widewater area of the towpath. The design would try to incorporate massing, scale, and materials reflective of or consistent with the site surroundings. However, this alternative would significantly alter the historic route and character of the towpath. It would introduce improvements not in keeping with the historic character-defining features of the canal. Therefore, the impact would be moderate, long-term, and adverse.

Cumulative Impacts. Past, ongoing and future projects occurring near Widewater would not impact the historic structures in the project area and would not add to the impacts caused by Alternative E. Therefore, there would be no cumulative impacts to historic structures.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of Alternative E would have an *adverse effect* on historic properties. This alternative would significantly alter the historic route and character of the towpath. It would introduce improvements not in keeping with the historic character-defining features of the canal. Therefore, a Memorandum of Agreement with the Maryland Historical Trust would be prepared addressing how the adverse effect would be mitigated.

Conclusion. The introduction of two new elevated walks would have a moderate, long-term, adverse impact to the historic structures at Widewater. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The National Park Service would have to enter into a Memorandum of Agreement with the Maryland Historical Trust to mitigate impacts to historic structures.

4.4.1.7 ALTERNATIVE F

Under Alternative F, one new elevated walk would be constructed at the Major Erosion Segment and the existing elevated walk would be removed. Alternative F would introduce one elevated walk to the natural setting of Widewater and it would replicate the historic character of the towpath. This would maintain the historic alignment and offer interpretive opportunities. Aggregate would be used for all other sections. The impact associated with this alternative would be minor, long-term, and beneficial.

Cumulative Impacts. Past, ongoing and future projects occurring near Widewater would not impact the historic structures in the project area and would not add to the impacts caused by Alternative F. Therefore, there would be no cumulative impacts to historic structures.

Section 106 Summary. In accordance with Section 106 of the National Historic Preservation Act, implementation of the Alternative F would have *no adverse effect* on historic properties.

Conclusion. The introduction of one new elevated walk would have a minor, long-term, beneficial impact on historic structures in the project area. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Rehabilitation of the towpath would be in keeping with the *Secretary of the Interior's Standards for the Treatment of Historic Properties.*

4.5 IMPACTS ON FLOODPLAINS

4.5.1 DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of floodplain impacts were derived from the available information on the Chesapeake and Ohio Canal National Historical Park and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on floodplains are defined as follows:

- *negligible*, floodplains would not be affected, or changes would be either non-detectable or if detected, would have effects that would be considered slight, and local.

- *minor*, changes in floodplains would be measurable, although the changes would be small and the effects would be localized. No mitigation measures associated with water quality or hydrology would be necessary.

- *moderate*, changes in floodplains would be measurable and would be relatively local. Mitigation measures associated with water quality or hydrology would be necessary and the measures would likely succeed.

- *major*, changes in floodplains would be readily measurable and would have substantial consequences, that would be measurable and widespread. Mitigation measures to offset the adverse effects would be required, extensive, and the success of the mitigation measures would not be guaranteed.

4.5.2 ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the towpath alignment and existing towpath conditions would remain and the canal stone walls would not be repaired. No impacts to floodplain values or functions would occur because no construction-related land disturbance or fill would take place. However, the No-Action Alternative is not consistent with the recommendation outlined in the *Flood Recovery Plan*, which identified Widewater a priority area.

Cumulative Impacts. The implementation of the No-Action Alternative would have no direct impacts to floodplains; therefore, no cumulative impact would occur.

Conclusion. No impacts to floodplains would occur under the No-Action Alternative. There would be no cumulative impact. No impairment to the park resources or values would occur

4.5.3 ALTERNATIVE B - PREFERRED ALTERNATIVE

Under the Preferred Alternative, the construction of the two elevated walks, reestablishment of the towpath, and rehabilitation to the dry laid stone walls would take place within a regulated 100-year floodplain. The towpath's historic alignment is within the floodplain and alternatives were developed to follow the historic alignment. Therefore, as the designs of each element of this project move forward, the National Park Service would consider the existing flood conditions and hazards.

The Preferred Alternative would not increase any flood-associated risk to the human environment because the use of the trail by visitors is short-term. Flood events can be predicted in advance to give appropriate warning to visitors and restrict use of the towpath. The project would have a negligible effect on storage capacity and would not affect the floodplain functions or natural values. The design for various project elements such as the elevated walk and towpath rehabilitation would be consistent with the sustainability objectives, design recommendations, and mitigation measures prescribed in the *Flood Recovery Plan* and subsequent National Park Service studies.

Overall, the Preferred Alternative would have a minor, long-term, adverse impact on floodplains because of the construction within the floodplain.

Cumulative Impacts. A number of past, present and reasonably foreseeable projects have impacted and will continue to impact floodplains near Widewater. For example, past flood events have damaged the existing infrastructure at the C&O Canal, which has had an indirect adverse impact to the floodplain from the changes in hydrology and erosive forces. Other foreseeable or present projects such as the Tavern Entrance Road could have adverse impacts to floodplains because some of the project is located in the floodplain and the construction requires placement of fill and/or other land disturbance activities. The towpath rehabilitation when added

to other past, present, and foreseeable projects or events would have an adverse, cumulative impact.

Conclusion. Under the Preferred Alternative, minor, long-term, adverse impacts would occur because of the construction of the two elevated walks and placement of surface aggregate in the floodplain. Past, present, and foreseeable projects or events would have an adverse cumulative impact. Mitigation measures (to the extent environmentally and economically practical) would be implemented to ensure that the design is sustainable.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historic Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The design and construction for this project should be consistent with the sustainability objectives, design recommendations, and mitigation measures prescribed in the *Flood Recovery Plan* and subsequent studies. Flood mitigation is offered through the design process by incorporating engineering methods for protecting the human environment and minimizing storm damage. Structural flood protection measures must be professionally engineered to effectively manage existing flood conditions and hazards. In addition, Best Management Practices would be implemented during construction. Soil compaction and vegetation disturbance would be kept to the minimal amount and space required to install the elevated walk and reconstruct the towpath within the original alignment.

4.5.4 ALTERNATIVE D - ALL TOWPATH

Under Alternative D, all four segments of the towpath would be rehabilitated using fill material and surfacing aggregate. Structural means such as rock-filled gabions, dry laid stone walls, and concrete pads may be used to build the towpath sides to hold the fill and aggregate. Alternative D involves more fill and construction within the floodplain when compared to the other alternatives; however, for the size of the floodplain and intended recreational use, the impacts would be minor, long-term, and adverse.

Cumulative Impacts. Cumulative impacts would be the same as the Preferred Alternative.

Conclusion. Under Alternative D, the proposed rehabilitation of the entire towpath would have the greatest amount of fill within the floodplain. The adverse impact would be minor and long-term. Past, present, and foreseeable projects or events would have an adverse cumulative impact.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as described for the Preferred Alternative.

4.5.5 ALTERNATIVES C, E, AND F

Impacts to floodplains from the construction and implementation of Alternatives C, E, and F are very similar; therefore, they have been grouped together for this impact analysis. The size of the construction footprints for each of the alternatives is virtually the same. The construction of proposed elevated walk, minor rehabilitation to the dry laid stone wall, and reestablishment of the towpath have the potential for minor, long-term, adverse impacts because the construction would be within the 100-year floodplain. The impacts to floodplains for Alternatives C, E, and F are the same as described in the Preferred Alternative except for the amount of fill material. The reestablishment of the towpath for different build alternatives is slightly different; however; this difference is negligible for the purposes of measuring impacts to the floodplain. The floodplain function and natural values would not be changed as a result of implementing any of the proposed alternatives.

Cumulative Impacts. Cumulative impacts would be the same as the Preferred Alternative.

Conclusion. The construction of proposed elevated walk, minor rehabilitation to the dry laid stone wall and reconstruction of the towpath would have minor, long-term, adverse impacts to the 100-year floodplain because of construction and placement of fill within the 100-year floodplain. Past, present, and foreseeable projects or events would have an adverse cumulative impact.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as described for the Preferred Alternative.

4.6 IMPACTS ON WETLANDS

According to the National Park Service *Procedural Manual # 77-1: Wetland Protection,* the National Park Service policy is to avoid adverse wetland impacts wherever practical. If wetland impacts are not avoidable, then the National Park Service must minimize the wetland impacts to the extent practicable by designing or modifying the actions or facilities so to minimize the wetland degradation or loss and then by using Best Management Practices or mitigation for activities in or affecting wetlands. Lastly, after avoidance and minimization have been applied to the maximum extent practicable, remaining wetland degradation or loss must be offset through wetland compensation. For purpose of wetland compensation, wetland restoration must, at a minimum, provide for a one-to-one wetland function replacement with a focus on the National Park Service No Net Loss of Wetland Policy.

Because of the historic significance of the towpath location, avoidance of the wetland impacts is not practical. Avoiding wetland impacts would require modification of the towpath alignment.

4.6.1 DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of wetland impacts were derived from the available information on the Chesapeake and Ohio Canal National Historical Park, and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on wetlands are defined as follows:

- *negligible*, No measurable or perceptible changes in wetland size, integrity, or continuity would occur.

- *minor*, The impact would be measurable or perceptible, but slight. A small change in size, integrity or continuity could occur due to short-term, indirect effects such as construction related runoff. However, the overall viability of the resource would not be affected.

- *moderate*, The impact would be sufficient to cause a measurable change in the size, integrity, or continuity of the wetland or would result in a small, but permanent loss or gain in wetland acreage.

- *major*, The action would result in a measurable change in all three parameters (size, integrity, and continuity) or a permanent loss of large wetland areas. The impact would be substantial and highly noticeable.

4.6.2 ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the towpath alignment and existing towpath conditions would remain and the canal stone walls would not be rehabilitated. No impacts to wetlands would occur because no construction-related land disturbance or fill would occur.

Cumulative Impacts. Implementation of the No-Action Alternative would have no impacts to wetlands; therefore, no cumulative impacts would occur.

Conclusion. No impact to wetlands would occur under the No-Action Alternative. Past, present, and reasonably foreseeable future actions would not create cumulative impacts. There would be no impairment to park resources or values.

4.6.3 ALTERNATIVE B (PERFERRED ALTERNATIVE) AND ALTERNATIVES C, E, AND F

Impacts to wetlands from the construction and implementation of Alternatives B, C, E, and F are very similar; therefore they have been grouped together for this impact analysis. The construction footprint for each of the alternatives is virtually the same. The construction of proposed elevated walk, minor rehabilitation to the dry laid stone wall, and reconstruction of the towpath have the potential for minor, long-term, adverse impacts to wetlands adjacent to the towpath. The potential impacts to wetlands are described for each segment.

Major Erosion Segment. Two wetland habitats exist to the north of the project area. These wetlands appear to have a hydrological connection to the canal, which goes across the Major Erosion Segment under the existing elevated walk. The new elevated walk design would not affect this connection because the connection would remain. The design would not impede the flow. Therefore, the construction of the new elevated walk would have no adverse indirect impacts to either wetland and would not change the hydrologic regime[1] of either wetland. The replacement of the elevated walk would have a minor, short-term, adverse impact to wetlands during construction due to the close proximity to the PEMC wetland and canal. Again, the elevated walk would be constructed at an elevation high enough to minimize the potential impacts of shading to the existing vegetation.

All Bedrock Segment and Moderate Damage Segment**.** The reestablishment of the towpath or construction of an elevated walkway along the All Bedrock and Moderate Damage Segments would have no impacts to wetlands because the proposed construction is not within a wetland nor would the construction likely affect nearby wetland functions or values. The replacement of stones or wall rehabilitation would have adverse impacts to the C&O Canal waterway during the construction because the rehabilitation to the stones are likely to cause minor turbidity. The impacts would be negligible, short-term, and adverse.

Causeway Segment. The Causeway Segment divides two wetland habitats as described in the Affected Environment section. The causeway segment is fill material unlike the other segments, which are mainly bedrock. The Preferred Alternative as well as the Alternatives C, E, and F would be constructed in such a manner to stay within the area of the existing towpath. Some wetland vegetation exists along the towpath on the Causeway Segment. Consultation with the U.S. Army Corps of Engineers is recommended to determine the wetland boundaries for the purposes of Section 404 of the Clean Water Act. Impacts to the wetland vegetation would be minor (estimated less than 0.1 acre).

The construction of an elevated walkway or installation of path aggregate would have a minor, short-term, adverse impact to wetlands from construction activities. The footprint of the proposed activities is outside the wetland habitat; however, a wetland jurisdictional determination and consultation with the U.S. Corps of Engineers is recommended to ascertain the wetland boundaries as they relate to U.S. Army Corps of Engineers 1987 *Wetland Delineation Manual* and applicable Section 404 regulations of the Clean Water Act.

Minor, short-term adverse impacts would occur during construction on the Major Erosion Segments and Causeway Segments. Best Management Practices as described in the Mitigation Measures would be employed to minimize impacts.

The footprint of the elevated walk could shade wetlands along the Major Erosion Section. It would span an area where the two wetland habitats drain into the canal. A jurisdictional determination would be required to determine the exact acreage of wetland impacts but the impact is minor (estimated to be less than 0.1 acre).

[1] The hydrologic regime is the sum total of water that occurs in an area on average during a given period (USCOE, 1987).

Wall Repairs - The repairs to the stone walls would have a negligible, short-term, adverse impact. The impacts would not change the wetland functions or values, but would result in temporary disturbance during construction. Compensation would not be required for the wall repairs; however, Best Management Practices as discussed in the Mitigation Measures would be employed to minimize short-term, adverse impacts such as turbidity.

Staging Area or Stockpiling. The National Park Service would designate to the contractor an appropriate staging and stockpiling area that would not affect wetlands. Best Management Practices as described in the mitigation measures would be used to avoid/minimize impacts.

Cumulative Impacts. A number of past, present and reasonably foreseeable projects have and will impact wetlands near Widewater. For example, past flood events such as the 1996 event have damaged the existing infrastructure at the C&O Canal. The damage to infrastructure has had an indirect adverse impact to wetlands from the changes in hydrology and erosive forces. Other foreseeable or present projects such as the Tavern Entrance Road and other towpath rehabilitation could have adverse impacts because wetlands are down gradient of the project area and the construction requires placement of fill and/or other land disturbance activities. A separate environmental assessment is being prepared by the Federal Highway Administration in coordination with the National Park Service for the Entrance Road to assess the potential impacts of this project. The towpath rehabilitation when added to other past, present and foreseeable projects or events would have an adverse, cumulative impact on wetlands.

Conclusion. The Preferred Alternative would have minor, long-term, adverse impacts to wetlands because of potential shading of wetlands along the Major Erosion Segment and minor, short-term, adverse impacts during construction because of the close proximity to wetlands and the canal along the remainder of the project area. The wetland functions or values would not be substantially affected. When added to past, present, and reasonably foreseeable future actions or events, the Preferred Alternative would cause adverse, cumulative impacts.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The following mitigation measures are recommended for the implementation of the Preferred Alternative. Many of the measures were obtained from Appendix 2 "Best Management Practices/Conditions" from the National Park Service's *Procedural Manual #77-1 - Wetland Protection* and modified to fit the site-specific conditions for this project.

- Consult with U.S. Army Corps of Engineers and Maryland Department of Environment - The National Park Service would consult with the U.S. Army Corps of Engineers to determine the jurisdiction boundaries of the wetlands adjacent to the towpath construction area. In addition, the Maryland Department of the Environment and Corps of Engineers would be consulted with to determine if the National Park Service should

complete a joint permit application if jurisdictional wetlands were impacted. This will be dependent on the wetland boundary determination and the design of the footpath along the Major Erosion Segment. If the area along the Causeway Segment and Major Erosion Segments falls under the Corps' jurisdiction and mitigation is necessary, the National Park Service guidance states wetland restoration would be followed and a minimum of a one-to-one wetland function replacement would occur. Because of the nature of the project (recreational path), small area of potential impacts to wetlands (less than 0.1 acres), lack of the three parameters (no hydric soils[2]) for jurisdictional wetland determination and existing site conditions, it is unlikely that wetland compensation would be required; however, consultation would be performed to determine jurisdictional boundaries as well as permit requirements due to the close proximity to wetlands and existing hydrologic connection under the elevated walk.

- Maintain hydrology - The proposed action would be conducted in such a manner to have only negligible effects on the site hydrology, including flow, circulation, velocities, hydroperiods, water level, and fluctuations to minimize potential impacts to adjacent wetlands or wetlands that have a hydrologic connection.

- Maintain water quality - The proposed action would be constructed in a manner that would avoid degrading water quality to the maximum extent possible. Measures would be employed to prevent or controls spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Contractors should use vegetable-based hydraulic fluid, were possible. Action would be consistent with the state's water quality standards and Clean Water Act Section 401 certification.

- Employ erosion and sediment control measures - Appropriate erosion and siltation controls would be maintained during construction, and all exposed soils or fill material would be permanently stabilized at the earliest practicable date in accordance with Maryland Department of Environment standards regarding erosion and sediment control..

- Placement of excavated materials - Whenever possible, excavated materials would be placed on an upland site.

- Minimize shade impacts from structures - The elevated walkway would be designed to minimize shade impacts to wetland plants or sites, to the extent possible.

- Best Management Practices - Best Management Practices would be implemented during construction. Soil compaction and vegetation disturbance would be kept to the minimal amount and space required to install the elevated walk and reconstruct the towpath within the original alignment.

[2] In general, the Major Erosion Segment is characterized by rocky outcrops and has no soil except for a few thin pockets of organic matter in the rocks. The soils in these pockets do not contain hydric soil characteristics such as mottles, gleyed colors, and other reducing soil conditions.

4.6.4 ALTERNATIVE D – ALL TOWPATH

Major Erosion Segment. The reestablishment of the towpath and installation of fill and surface aggregate would have a minor, long-term, adverse impact on wetlands because of the potential change in the hydrology. Provisions would be needed to maintain the hydrologic connection between the wetlands north of the project area and the canal. During flood events, the hydroperiod in the adjacent floodplain could change from the added fill material where water normally flows under the existing elevated walk. Also, the small rock dam would need to be preserved, otherwise the water regime in the adjacent emergent wetland would be adversely impacted. Short-term, moderate, adverse impacts would occur during construction from work within or adjacent to the wetland and mitigation measures would be followed to minimize the impacts. If this alternative were pursued, a wetland jurisdictional determination by the Army Corps of Engineers would be needed to determine whether or not the area would be considered a jurisdictional wetland.

Other Segments and Actions. The impacts to the All Bedrock Segment, Moderate Damage Segment, and Causeway Segment, as well as the staging area and wall repairs are the same as described in the Preferred Alternative**.**

Cumulative Impacts. Cumulative impacts would be the same as for Alternatives B, C, E, and F.

Conclusion. The construction of the All Towpath Segment would have a minor, short-term and long-term adverse impact to wetlands because of associated fill and construction activities in or around wetlands. Cumulative impacts would be the same as for Alternatives B, C, E, and F.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as the Preferred Alternative

4.7 IMPACTS ON LAND COVER AND VEGETATION

4.7.1 DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of impacts on land cover and vegetation were derived from the available information on the Chesapeake and Ohio Canal National Historical Park and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on land cover and vegetation are defined as follows:

- *negligible*, No vegetation would be affected or some individual plants could be affected as a result of the alternative, but there would be no effect on the vegetation essential to maintaining the landscape composition. The effects would be on a small scale, and no species of special concern would be affected.

- *minor*, the alternative would affect some individual plants and would also affect a relatively minor portion of the vegetation essential to maintaining the landscape composition. Mitigation to offset adverse effects, including special measures to avoid affecting species of special concern, could be required and would be effective.

- *moderate*, the alternative would affect some individual plants and would also affect a sizeable segment of the vegetation essential to maintaining the landscape composition over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful.

- *major*, the alternative would have a considerable impact on vegetation essential to maintaining the landscape composition and affect a relatively large area in and out of the project area. Extensive mitigation measures to offset the adverse effects would be required, and the success of the mitigation measures would not be guaranteed.

4.7.2 ALTERNATIVE A – NO-ACTION ALTERNATIVE

The No-Action Alternative would not impact vegetation and land cover in the project area. All the existing vegetation would remain the same except as influenced by continued routine park activities and natural environmental conditions and events.

Cumulative Impacts. Typical effects associated with hiker/biker traffic, towpath maintenance, storm conditions, heavy winds, floods, and/or dry seasons are anticipated to continue. Ongoing and future projects, such as the Tavern Entrance Road Rehabilitation and the Old Anglers Inn Parking, may require the removal of vegetation. Although minor, long-term, adverse cumulative impacts to vegetation and land cover would occur, the No-Action Alternative would not contribute any project related impacts.

Conclusion. There would be no new impact to the vegetation or land cover within the project area. Typical weather conditions and hiker/biker traffic would continue to have the greatest influence on the vegetation. Past, present, and reasonably foreseeable future actions may have the potential to adversely and cumulatively impact vegetation and land cover. There would be no impairment to park resources and values.

4.7.3 ALTERNATIVE B – PREFERRED ALTERNATIVE

Alternative B, the Preferred Alternative, would impact vegetation and land cover in the project area. Nearly all the existing vegetation and land cover would remain. However, two or three small sycamore trees have become established along the Causeway Segment and might have to be removed to allow placement of the elevated walk. Little vegetation is present in the Major Erosion Segment. Wetland vegetation along the Major Erosion Segment would incur few or no impacts. Some forbs, grasses, and shrubs along the Moderate Damage Segment towpath might be disturbed or impacted by placement of the elevated walk and reconstruction of the towpath. These impacts would be minor, long-term, and adverse. The bedrock terrace forest lies outside the area that would be affected and no impacts would occur to this habitat.

Impacts from construction for upgrading the canal towpath and retaining wall would create minor, long-term adverse impact to the land cover and vegetation due to the existence of land cover and vegetation within the project area. Impacts to the land cover and vegetation would be localized and only within the right-of-way of the towpath. Upgrades to the towpath would not create undue adverse impacts to the surrounding natural area outside the towpath right-of-way.

Cumulative Impacts. Typical effects associated with hiker/biker traffic, towpath maintenance, storm conditions, heavy winds, floods, and/or dry seasons are anticipated to continue. Ongoing intensity and future projects, such as the Tavern Entrance Road Rehabilitation and the Old Angler's Inn Parking, may require the removal of vegetation. When added to the Preferred Alternative these would adversely and cumulatively impact vegetation and land cover that would be minor and long-term.

Conclusion. There would be some minor, long-term, and adverse impacts to vegetation and land cover in the project area associated with the possible removal of a few small trees, some shrubs, and herbaceous ground cover. Typical weather conditions and towpath maintenance would continue to have the greatest influence on the vegetation. Past, present, and reasonably foreseeable future actions would create adverse, cumulative impacts.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Best Management Practices would be implemented during construction. Soil compaction and vegetation disturbance would be kept to a minimal amount and space required to install the elevated walk and reconstruct the towpath within the original alignment.

Because of the narrowness of the towpath and the proximity of the undisturbed bedrock terrace forest to the work site, full-sized vehicles, such as dump trucks, front end loaders, etc., would not be used. A temporary ramp/loading area could be possible at either Angler's Inn or the south end of Widewater. Light vehicles, such as bobcats, would operate in this area, but would be confined to the towpath right-of-way. In addition, no trees would be felled other than those growing on the towpath (Lea, 1994).

Prior to construction, the trees growing on the towpath that are to be cut or pruned would be flagged and consultation would occur with the Natural Resource Managers of the Chesapeake and Ohio Canal National Historical Park (Lea, 1994).

A regional exotic species team meets with Park staff each year to conduct management of exotic species within the Park. Park staff will meet with the regional exotic species team to determine methods and execute management strategies for control of exotic species in and adjacent to the project area for protection of rare, threatened, and endangered species.

4.7.4 ALTERNATIVE C

Alternative C would impact vegetation and land cover in the project area. Nearly all the existing vegetation and land cover would remain. Two or three small sycamore trees have become established along the Causeway Segment and might have to be removed to allow placement of the elevated walk. Little vegetation is present in the Major Erosion Segment. Some forbs, grasses, and shrubs along the All Bedrock Segment and the Moderate Erosion Segment of the existing towpath might also be disturbed or impacted by placement of the elevated walk. Wetland vegetation along the Major Erosion Segment would incur few or no impacts. Impacts would be minor, long-term, and adverse. The bedrock terrace forest lies outside the area that would be affected and no impacts would occur to this habitat.

Impacts from construction for upgrading the canal towpath and retaining wall would be the same as for the Preferred Alternative.

Cumulative Impacts. Cumulative impacts would be the same as for the Preferred Alternative.

Conclusion. There would be some minor, long-term, and adverse impacts to vegetation and land cover in the project area associated with the possible removal of a few small trees, some shrubs, and herbaceous ground cover. Typical weather conditions and towpath maintenance would continue to have the greatest influence on the vegetation. Past, present, and reasonably foreseeable future actions would create minor, long-term, adverse, cumulative impacts.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as for the Preferred Alternative.

4.7.5 ALTERNATIVE D

Alternative D would impact vegetation and land cover in the project area. Nearly all the existing vegetation and land cover would remain. Two or three small sycamore trees have become established along the Causeway Segment and might have to be removed to reconstruct the towpath. Little vegetation is present in the Major Erosion Segment. Some forbs, grasses, and shrubs along the Major Damage Segment of the towpath might be disturbed or impacted by reconstruction of the towpath. A wetland exists adjacent to the towpath and drainage is across the bedrock in this segment. Wetland vegetation would be affected by alteration of drainage patterns. Impacts would be minor, long-term, and adverse. The bedrock terrace forest lies outside the area that would be affected and no impacts would occur to this habitat.

Impacts from construction for upgrading the canal towpath and retaining wall would be the same as for the Preferred Alternative.

Cumulative Impacts. Cumulative impacts would be the same as for the Preferred Alternative.

Conclusion. There would be some minor, long-term, and adverse impacts to vegetation and land cover in the project area associated with the possible removal of a few small trees, some shrubs, and herbaceous ground cover and with the alteration of wetland drainage patterns at the Major Erosion Segment. Typical weather conditions and towpath maintenance would continue to have the greatest influence on the vegetation. Past, present, and reasonably foreseeable future actions would create adverse, cumulative impacts.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as for the Preferred Alternative.

4.7.6 ALTERNATIVE E

Alternative E would impact vegetation and land cover in the project area. Nearly all the existing vegetation and land cover would remain. Two or three small sycamore trees have become established along the Causeway Segment and might have to be removed to allow placement of the elevated walk. Little vegetation is present in the Major Erosion Segment. Some forbs, grasses, and shrubs along the existing towpath might be disturbed or impacted by placement of the elevated walk and reconstruction of the towpath. Small trees and vines, such as Virginia pine, red maple, red oak, Eastern red cedar, and Virginia creeper, would be removed along the Detour Route corridor to provide space for construction and placement of the elevated walk and path. Wetland vegetation along the Major Erosion Segment would incur few or no impacts. Impacts would be minor, long-term, and adverse. The bedrock terrace forest lies outside the area that would be affected and no impacts would occur to this habitat.

Impacts from construction for upgrading the canal towpath and retaining wall would be the same as for the Preferred Alternative.

Cumulative Impacts. Cumulative impacts would be the same as for the Preferred Alternative.

Conclusion. There would be some minor, long-term, and adverse impacts to vegetation and land cover in the project area associated with the possible removal of a few small trees, some shrubs, and herbaceous ground cover along the existing towpath route and the required removal of small trees, shrubs, and herbaceous ground cover along the Detour Segment. Typical weather conditions and towpath maintenance would continue to have the greatest influence on the vegetation. Past, present, and reasonably foreseeable future actions would create adverse, cumulative impacts.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other

relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as for the Preferred Alternative.

4.7.7 ALTERNATIVE F

Alternative F would impact vegetation and land cover in the project area. Nearly all the existing vegetation and land cover would remain. Two or three small sycamore trees have become established along the Causeway Segment and may have to be removed along with some forbs, grasses, and shrubs for reconstruction of the towpath. Little vegetation is present in the Major Erosion Segment where the elevated walk would be constructed. Wetland vegetation along the Major Erosion Segment would incur few or no impacts. Impacts would be minor, long-term, and adverse. The bedrock terrace forest lies outside the area that would be affected and no impacts would occur to this habitat.

Impacts from construction for upgrading the canal towpath and retaining wall would be the same as for the Preferred Alternative.

Cumulative Impacts. Cumulative impacts would be the same as for the Preferred Alternative.

Conclusion. There would be some minor, long-term, adverse impacts to vegetation and land cover in the project area associated with the possible removal of a few small trees, some shrubs, and herbaceous ground cover. Typical weather conditions and towpath maintenance would continue to have the greatest influence on the vegetation. Past, present, and reasonably foreseeable future actions would create adverse, cumulative impacts.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as for the Preferred Alternative.

4.8 IMPACTS ON AESTHETICS AND VISUAL RESOURCES

4.8.1 DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of impacts on aesthetic and visual resources were derived from the available information on the Chesapeake and Ohio Canal National Historic Park and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on aesthetic and visual resources are defined as follows:

- *negligible*, when the impact is localized and not measurable or at the lowest level of detection;

- *minor*, when the impact is localized and slight but detectable;
- *moderate*, when the impact is readily apparent and appreciable; or
- *major*, when the impact is severely adverse and highly noticeable.

4.8.2 ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the towpath near Lock 15 would not be rehabilitated and the retaining wall would not be stabilized. There would be no change to the appearance of the towpath or associated retaining walls or structures. Therefore, there would be no impact on aesthetics and visual resources.

Cumulative Effects. Implementation of the No Action Alternative would have no impact on aesthetics and visual resources. Therefore, there would be no cumulative impacts.

Conclusion. The No-Action Alternative would have no impact to aesthetics and visual resources because there would not be change in the appearance of the Widewater area. There would be no cumulative impact. No impairment would occur to the park values or resources.

4.8.3 ALTERNATIVE B (PREFERRED ALTERNATIVE)

Under the Preferred Alternative, two new elevated walks would be constructed and the existing elevated walk removed. As a result, two new structures would be added to the viewshed near Lock 15. The design would try to incorporate massing, scale and materials reflective of or consistent with the sites surroundings; however, the proposed action would still add a nonconforming visual element to the vistas to and from the towpath and Lock 15. The new elements to the viewshed would have a minor, long-term, adverse impact to the natural setting of Widewater. In addition, sections of the stone-faced wall would be rehabilitated in a fashion consistent with its historic appearance. The wall repairs would have no or negligible long-term, adverse impacts.

Cumulative Impacts. No past, present, or reasonably foreseeable future projects were identified within the viewshed of the proposed towpath rehabilitation that would impact the aesthetics and visual resources; therefore, no cumulative impacts are anticipated.

Conclusion. The introduction of two new elevated walks would have a minor, long-term, adverse impact to aesthetics and visual resources at Widewater. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The new elevated walks and repairs to the stone-faced walls would be constructed with a context sensitive design in keeping with the natural setting of the park and historic structures such as Lock 15. Vistas to and from the locks and towpath would be taken into consideration with the design of the new elevated walk. To the extent practical, massing, scale, and materials would be reflective of or consistent with the site's surroundings as not to draw attention from the parks resources.

4.8.4 ALTERNATIVE C

Under Alternative C, one elevated walk would be constructed across all four segments of the towpath described for this project, and the existing elevated walk would be removed. The new, longer elevated walk would add a nonconforming element to the viewshed, which would have a moderate, long-term, adverse impact on aesthetics and visual resources. In addition, sections of the stone-faced wall would be rehabilitated. The wall rehabilitation would have no or negligible long-term, adverse impacts.

Cumulative Impacts. No past, present, or reasonably foreseeable future projects were identified within the viewshed of the proposed towpath rehabilitation that would impact the aesthetics and visual resources; therefore no cumulative impacts are anticipated.

Conclusion. The introduction of longer elevated walks would have a moderate, long-term, adverse impact to aesthetics and visual resources at Widewater. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as the Alternative B- Preferred Alternative.

4.8.5 ALTERNATIVE D

Under Alternative D, the towpath would be reestablished using surface aggregate and fill that would more closely resemble other sections of the towpath. Structural means such as wire gabions filled with stones, concrete pads and stone faced walls would be used to support the fill and aggregate. Because of the height at which the support structures would need to be built, they would be visually noticeable to park visitors. The design would try to incorporate massing, scale, and materials reflective of or consistent with the sites surroundings; however, the retaining structures would still add a nonconforming visual element to the vistas to and from the towpath and Lock 15. The impact would be minor, long-term, and adverse. In addition, sections of the stone-faced wall would be repaired. The wall repairs would have no or negligible long-term, adverse impacts.

Cumulative Impacts. No past, present, or reasonably foreseeable future projects were identified within the viewshed of the proposed towpath rehabilitation that would impact the aesthetics and visual resources; therefore no cumulative impacts are anticipated.

Conclusion. The reestablishment of the towpath using surface aggregate and fill would have a minor, long-term, adverse impact to aesthetics and visual resources at Widewater. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as the Alternative B- Preferred Alternative.

4.8.6 ALTERNATIVE E

Under the Alternative E, two new elevated walks would be constructed and the existing elevated walk removed. One of the walks would be constructed along a detour route which is further away from the canal. Two new structures would be added to the viewshed of the Widewater area of the towpath. The design would try to incorporate massing, scale, and materials reflective of or consistent with the sites surroundings; however, the proposed action would still add a nonconforming visual element to the vistas to and from the towpath and Lock 15. The new elements to the viewshed would have a minor, long-term, adverse impact to the natural setting of Widewater. In addition, sections of the stone-faced wall would be repaired. The wall repairs would have no or negligible long-term, adverse impacts.

Cumulative Impacts. No past, present, or reasonably foreseeable future projects were identified within the viewshed of the proposed towpath rehabilitation that would impact the aesthetics and visual resources; therefore no cumulative impacts are anticipated.

Conclusion. The introduction of two new elevated walks would have a minor, long-term, adverse impact to aesthetics and visual resources at Widewater. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as the Alternative B- Preferred Alternative.

4.8.7 ALTERNATIVE F

Under the Alternative F, one new elevated walk would be constructed at the Major Erosion Segment and the existing elevated walk removed. Alternative F would introduce one elevated walk to the natural setting of Widewater. Structural methods along the Causeway Segment would be required to retain the fill and surface aggregate. The structural methods used could also add a nonconforming visual element. The design would try to incorporate massing, scale, and materials reflective of or consistent with the site's surroundings; however, the proposed action would still add a nonconforming visual element to the vistas to and from the towpath and Lock 15. In addition, sections of the stone-faced wall would be repaired. The wall repairs would have no or negligible long-term, adverse impacts.

Cumulative Impacts. No past, present, or reasonably foreseeable future projects were identified within the viewshed of the proposed towpath rehabilitation that would impact the aesthetics and visual resources; therefore no cumulative impacts are anticipated.

Conclusion. The introduction of one new elevated walk would have a minor, long-term, adverse impact to aesthetics and visual resources at Widewater. No cumulative impacts would occur.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park, (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. Mitigation measures would be the same as the Alternative B- Preferred Alternative.

4.9 IMPACTS ON VISITOR EXPERIENCE AND USE

4.9.1 DEFINITION OF INTENSITY LEVELS

Analyses of the potential intensity of impacts on visitor experience and use were derived from the available information on the Chesapeake and Ohio Canal National Historical Park, and the professional judgment of the park staff. The thresholds of change for the intensity of impacts on visitor experience and use are defined as follows:

- *negligible*, when the impact would be a change that would not be perceptible or would be barely perceptible by most visitors.

- *minor*, when the impact would change a few visitors' experiences, which would be noticeable, but would result in little distraction or improvements in the quality of the experience;

- *moderate*, when the impact would change a large number of visitors' experiences that would result in a noticeable decrease or improvement in the quality of the experience. This would be indicated by a change in frustration level or inconvenience for a period of time.

- *major*, when the impact has a substantial improvement in many visitors' experiences or a severe drop in the quality of many visitors' experience, such as the addition or elimination of a recreational opportunity or a permanent change to an area.

4.9.2 ALTERNATIVE A – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the towpath at Widewater would not be rehabilitated. Bicyclists would continue to carry their bicycles across the trail or be detoured around Widewater off of the historic alignment of the towpath. In addition, pedestrians would continue to cross unsafe terrain, diminishing the experience for all visitors. To bypass the section of the towpath at Widewater, visitors must travel off the level towpath and climb a series of stairs up to Berma Road and then back down stairs to the towpath. Both options (the detour or carrying the bike) can be strenuous and not consistent with the rest of the towpath experience. The poor towpath conditions at Widewater reduce the visitor experience. If corrective measures are not taken to rehabilitate the towpath at Widewater, moderate, long-term, adverse impacts to the visitor experience would continue.

Cumulative Impacts. A number of past, current and reasonably foreseeable future projects will continue to impact the visitor experience at the C&O Canal near Widewater. The No-Action Alternative, when added to ongoing and future projects, such as the Great Falls Tavern Entrance Station Rehabilitation, the Great Falls Tavern Rehabilitation, and the Old Anglers Inn, would create a moderate adverse, cumulative impact during their construction.

Conclusion. If corrective actions are not taken to rehabilitate the towpath at Widewater, moderate, long-term adverse impacts to the visitor experience would continue to occur because carrying bicycles across the towpath or using the Bicycle Detour Route is strenuous for most visitors. Adverse, cumulative impacts would occur. There would be no impairment to park resources or values.

4.9.3 ALTERNATIVE B, C, D, E, F

The rehabilitation of the towpath and elevated walkway would enhance the visitor experience. Under Alternatives B (Preferred Alternative), C, D, E, and F, a moderate, long-term, beneficial impact to the visitor experience would occur because bicyclists would no longer have to carry their bicycles or use the detour route to bypass the poor towpath conditions at Widewater. In addition, the visitor use and experience of hikers would be enhanced.

The Preferred Alternative and other build alternatives have the potential for minor, short-term, adverse impacts during construction as a result of trail closures and the use of the detour. However, the bicycle detour is signed to direct visitors around the Widewater area.

Cumulative Impacts. A number of past, present, and reasonably foreseeable future projects will continue to impact the visitor experience at the C&O Canal near Widewater. The implementation of the towpath rehabilitation would have a minor, short-term, adverse cumulative impact when combined with other future park repairs. Overall, Alternatives B, C, D, E, and F, when added together to ongoing and future projects, such as the Great Falls Tavern Road Rehabilitation, the Great Falls Tavern Rehabilitation, and the Old Anglers Inn, would

create a moderate, beneficial, cumulative impact by enhancing the visitor use and experience of the park.

Conclusion. The rehabilitation of the towpath would have a moderate, long-term, beneficial impact; however, minor, short-term, adverse impacts would occur during construction because of trail closures necessary to rehabilitate the towpath. The implementation of the towpath rehabilitation would have a minor short-term, adverse cumulative impact when combined with other future park repairs. However, a long-term beneficial impact would ultimately result.

Because there would be no major, adverse impacts to resources or values whose conservation are (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Chesapeake and Ohio Canal National Historical Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document, there would be no impairment of the park's resources or values.

Mitigation Measures. The National Park Service would post signs at the park's visitor centers and along the towpath to inform visitors of the time and duration of towpath closures during construction. Construction work zones would be established for the trail construction and staging area to minimize impacts to the park and the visitor experience. Trail closures and posting of signs should occur early in the day to try to prevent visitors from parking at one end of the park and not being able to return via the same route to access their vehicles. Visitors would still be able to return to their starting point, but by taking a detour route.

4.10 CONSULTATION AND COORDINATION

Scoping is the effort to involve agencies and the general public in determining the scope of issues to be addressed in the environmental document. Among other tasks, scoping determines important issues and eliminates issues determined to be not important; allocates assignments among the interdisciplinary team members and/or other participating agencies; identifies related projects and associated documents; identifies other permits, surveys, consultations etc. required by other agencies; and creates a schedule that allows adequate time to prepare and distribute the environmental document for public review and comment before a final decision is made. Scoping includes any interested agency, or any agency with jurisdiction by law or expertise to obtain early input.

Design analysis studies have been completed that have helped the Chesapeake and Ohio Canal National Historical Park staff to examine a number of alternatives for stabilizing the towpath along the historic retaining wall and constructing a elevated walkway at Widewater.

In May 2002, the National Park Service met with the Maryland Historical Trust and the Maryland Department of the Environment and presented the concept for the stabilization of the historic towpath at Widewater. Both agencies concurred with the general concepts for both projects. Continued coordination will occur throughout the life of this project. There are no affiliated tribes requiring consultation.

In August 2002, the National Park Service solicited comment from the U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources on the determination of the rare, threatened, or endangered species within the project area.

Consultation and coordination will occur with the U.S. Army Corps of Engineers and the Maryland Department of the Environment prior to construction to determine the jurisdictional boundaries of the wetlands adjacent to the towpath and construction areas. A joint permit will be considered for the proposed action, which will be based largely on the wetland boundary determination and design of the footpath.

The environmental assessment will be distributed for public and agency review and comment for a period of at least 30 days. The National Park Service will provide the document to the Maryland Historical Trust for Section 106 compliance. The National Park Service will consider comments prior to determining if a Finding of No Significant Impact is warranted.

4.11 COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The following laws and associated regulations provided direction for the design or project alternatives, the analysis of impacts and the formulation of mitigation/avoidance measures:

National Environmental Policy Act of 1969 (Title 42 U.S. Code Sections 4321 to 4370 [42 USC 4321-470]). The purposes of National Environmental Policy Act include encouraging "harmony between [humans] and their environment and promote efforts which will prevent or eliminate damage to the environment…and stimulate the health and welfare of [humanity]." The purposes of the National Environmental Policy Act are accomplished by evaluating the effects of federal actions. The results of these evaluations are presented to the public, federal agencies, and public officials in document format (e.g., environmental assessments and environmental impact statements) for consideration prior to taking official action or making official decisions. Implementing regulations for the National Environmental Policy Act are contained in Part 1500 to 1515 of Title 40 of the U.S. Code of Federal Regulations (40 CFR 1500-1515).

Endangered Species Act of 1973, as amended (16 USC 1531-1544). The purposes of the Endangered Species Act include providing "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." According to the Endangered Species Act, "all Federal departments and agencies shall seek to conserve endangered species and threatened species: and "[e]ach Federal agency shall…insure that any action authorized, funded, or carried out by such agency…is not likely to jeopardize the continues existence of any endangered species or threatened species." The U.S. Fish and Wildlife Service (non-marine species and the National Marine Fisheries Service (marine species, including anadromous fish and marine mammals) administer the Endangered Species Act. The effects of any agency action that may affect endangered, threatened, or proposed species must be evaluated in consultation with either the U.S. Fish and Wildlife Service or National Marine Fisheries Service, as appropriate. Implementing regulations that describe procedures for interagency cooperation to determine the effects of actions on endangered, threatened, or proposed species are contained in 50 CFR 402.

National Historic Preservation Act of 1966, as amended (16 USC 470 *et sequentia)*. Congressional policy set forth in the National Historic Preservation Act includes preserving "the historical and cultural foundations of the Nation" and preserving irreplaceable examples important to our national heritage to maintain "cultural, educational, aesthetic, inspirational, economic, and energy benefits." The National Historic Preservation Act also established the National Register of Historic Places composed of "districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture." Section 106 of the National Historic Preservation Act requires that federal agencies take into account the effects of their actions on properties eligible for or included in the National Register of Historic Places and coordinate such actions with State Historic Preservation Offices. The National Historic Preservation Act also requires federal agencies, in consultation with the State Historic Preservation Office, to locate, inventory, and nominate all properties that appear to qualify for the National Register of Historic Places, including National Historic Landmarks. Further, it requires federal agencies to document those properties in the case of an adverse effect and propose alternatives to those actions, in accordance with the National Environmental Policy Act.

Clean Water Act of 1972, as amended (33 USC 1251-1387). The purpose of the Clean Water Act is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." The U.S. Army Corps of Engineers has been charged with evaluating federal actions that result in the potential degradation of the waters of the United States and issuing permits for actions consistent with the Clean Water Act. In the State of Maryland, the Corps of Engineers has a joint permit process with the Maryland Department of the Environment.

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APPENDIX A

Environmental Screening Form

DO-12 APPENDIX 1

ENVIRONMENTAL SCREENING FORM
(REVISED 28 JANUARY 2002)

This form must be attached to all documents sent to the regional director's office for signature. Sections A and B should be filled out by the project initiator (may be coupled with other park project initiation forms). Sections C, D, E, and G are to be completed by the interdisciplinary team members. While you may modify this form to fit your needs, you must ensure that the form includes information detailed below and must have your modifications reviewed and approved by the regional environmental coordinator.

A. PROJECT INFORMATION

Park Name CHOH - WIDEWATER

Project Number PMIS#60053

Project Type (*Check*):
- ☐ Cyclic
- ☐ Cultural Cyclic
- ☐ Repair/Rehab
- ☐ ONPS
- ☐ NRPP
- ☐ CRPP
- ☐ FLHP
- ☒ Line Item
- ☐ Fee Demo
- ☐ Concession Reimbursable
- ☐ Other (specify)

Project Location C&O Canal South of Lock 15

Project Originator/Coordinator Bob Hartman, Chief of Maintenance

Project Title

Contract #

Contractor Name

Administrative Record Location

Administrative Record Contact

B. PROJECT DESCRIPTION/LOCATION *[To begin the statutory compliance file, attach to this form, maps, site visit notes, agency consultation, data, reports, categorical exclusion form (if relevant), or other relevant materials.]*

This project addresses the stabilization of the existing canal towpath retaining wall that will stabilized or selectively reconstructed over a distance of approximately 760 fee. A sustainable footbridge, approximately 140 feet in length, will be constructed to connect usable sections of the towpath after the retaining walls are stabilized or repaired, to provide visitor access through the area. The design of the footbridge would mirror one used upstream, over a similar area, for compatibility.

This project will be undertaken using both a contract to construct the footbridge and a cooperative agreement with the Dry Stone Conservancy to stabilize and, as necessary, reconstruct the historic stone walls.

Preliminary drawings attached? ☐Yes ☐No

Background info attached? ☐Yes ☐No

Date form initiated June 4, 2002

Anticipated compliance completion date

Projected advertisement/Day labor start

Construction start

C. RESOURCE EFFECTS TO CONSIDER *(Tailor the following to meet individual park/unit project needs.)*

Are any measurable[1] impacts possible on the following physical, natural or cultural resources?	Yes	No	Data Needed to Determine
1. Geological resources – soils, bedrock, streambeds, etc.			Depends on option selected
2. From geohazards		X	
3. Air quality		X	
4. Soundscapes		X	
5. Water quality or quantity		X	
6. Streamflow characteristics		X	
7. Marine or estuarine resources		X	
8. Floodplains or wetlands	X		
9. Land use, including occupancy, income, values, ownership, type of use		X	
10. Rare or unusual vegetation – old growth timber, riparian, alpine		X	
11. Species of special concern (plant or animal; state or federal listed or proposed for listing) or their habitat		?	Need to determine thru USFW, MD DNR (2 agencies)
12. Unique ecosystems, biosphere reserves, World Heritage Sites		X	
13. Unique or important wildlife or wildlife habitat		?	USFWS, MD DNR
14. Unique or important fish or fish habitat		X	
15. Introduce or promote non-native species (plant or animal)		X	
16. Recreation resources, including supply, demand, visitation, activities, etc.		X	
17. Visitor experience, aesthetic resources		X	
18. Cultural resources including cultural landscapes, ethnographic resources		X	
19. Socioeconomics, including employment, occupation, income changes, tax base, infrastructure		X	
20. Minority and low income populations, ethnography, size, migration patterns, etc.		X	
21. Energy resources		X	
22. Other agency or tribal land use plans or policies		X	
23. Resource, including energy, conservation potential		X	
24. Urban quality, gateway communities, etc.		X	
25. Long-term management of resources or land/resource productivity		X	
26. Other important environment resources (e.g. geothermal, paleontological resources)?		X	

[1] Measurable impacts are those that the interdisciplinary team determines to be greater than negligible by the analysis process described in DO-12 §2.9 and §4.5(G)(4) to (G)(5).

D. MANDATORY CRITERIA

Mandatory Criteria: If implemented, would the proposal:	Yes	No	Data Needed to Determine
A. Have material adverse effects on public health or safety?		X	
B. Have adverse effects on such unique characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands; floodplains; or ecologically significant or critical areas, including those listed on the National Register of Natural Landmarks?		?	Actual alignment of original towpath may not be achieved. This may or may not be considered an adverse impact.
C. Have highly controversial environmental effects?		X	
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?		X	
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?		X	
F. Be directly related to other actions with individually insignificant, but cumulatively significant, environmental effects?		X	
G. Have adverse effects on properties listed or eligible for listing on the National Register of Historic Places?		X	
H. Have adverse effects on species listed or proposed to be listed on the List of Endangered or Threatened Species or have adverse effects on designated Critical Habitat for these species?		X	Need to check on seasonal habitat areas
I. Require compliance with Executive Order 11988 (Floodplain Management), Executive Order 11990 (Protection of Wetlands), or the Fish and Wildlife Coordination Act?		X	
J. Threaten to violate a federal, state, local, or tribal law or requirement imposed for the protection of the environment?		X	
K. Involve unresolved conflicts concerning alternative uses of available resources (NEPA sec. 102(2)(E)?		X	
L. Have a disproportionate, significant adverse effect on low-income or minority populations (EO 12898)?		X	
M. Restrict access to and ceremonial use of Indian sacred sites by Indian religious practitioners or adversely affect the physical integrity of such sacred sites (EO 130007)?		X	
N. Contribute to the introduction, continued existence, or spread of federally listed noxious weeds (Federal Noxious Weed Control Act)?		X	
O. Contribute to the introduction, continued existence, or spread of non-native invasive species or actions that may promote the introduction, growth or expansion of the range of non-native invasive species (EO 13112)?		X	
P. Require a permit from a federal, state, or local agency to proceed, unless the agency from which the permit is required agrees that a CE is appropriate?		X	Preliminary project review with MDE indicated project will probably fall under general permit
Q. Have the potential for significant impact as indicated by a federal, state, or local agency or Indian tribe?		X	
R. Have the potential to be controversial because of disagreement over possible environmental effects?		?	To be determined through public scoping
S. Have the potential to violate the NPS Organic Act by impairing park resources or values?		X	

E. OTHER INFORMATION *(Please answer the following questions/provide requested information.)*

Are personnel preparing this form familiar with the site? ☒ Yes ☐ No

Did personnel conduct a site visit? ☒ Yes ☐ No *(If yes, attach meeting notes or additional pages noting when site visit took place, who attended, etc.)*

Is the project in an approved plan such as a General Management Plan or an Implementation Plan with an accompanying environmental document? ☐ Yes ☐ No

If so, plan name _____

Is the project still consistent with the approved plan? ☐ Yes ☐ No *(If no, prepare plan/EA or EIS.)*

Is the environmental document accurate and up-to-date? ☐ Yes ☐ No *(If no, prepare plan/EA or EIS.)* FONSI☐ ROD ☐ *(Check)* Date approved _____

Are there any interested or affected agencies or parties? ☒ Yes ☐ No

Did you make a diligent effort to contact them? ☐ Yes ☐No

Has consultation with all affected agencies or tribes been completed? ☐ Yes ☐ No
(If so, attach additional pages detailing the consultation, including the name, the dates, and a summary of comments from other agencies or tribal contacts.)

Are there any connected, cumulative, or similar actions as part of the proposed action? ☐ Yes ☐ No
(If so, attach additional pages detailing the other actions.)

F. INSTRUCTIONS FOR DETERMINING APPROPRIATE NEPA PATHWAY

Complete the following tasks: conduct a site visit or ensure that staff is familiar with the site's specifics; consult with affected agencies, and/or tribes; and interested public and complete this environmental screening form.

If your action is not described in DO-12 § 3.4 or if you checked yes or identified "data needed to determine" impacts in any block in Section D (Mandatory Criteria), you must prepare an environmental assessment or environmental impact statement.

If you checked no in all blocks in Section C (resource effects to consider) and checked no in all blocks in Section D (Mandatory Criteria) and if the action is described in DO-12 § 3.4, you may proceed to the categorical exclusion form. (Appendix 2 of DO-12 Handbook)

G. INTERDISIPLINARY TEAM SIGNATORY *(All interdisciplinary team members must sign.)*

By signing this form, you affirm the following: you have either completed a site visit or are familiar with the specifics of the site; you have consulted with affected agencies and tribes; and you, to the best of your knowledge, have answered the questions posed in the checklist correctly.

Interdisciplinary Team Leader Name	Field of Expertise	Date Signed
Technical Specialists Names	**Field of Expertise**	**Date Signed**

H. SUPERVISORY SIGNATORY

Based on the environmental impact information contained in the statutory compliance file and in this environmental screening form, environmental documentation for the subject project is complete.

Recommended: Further information needed to complete environmental assessment. Interdisciplinary team to be assembled.

Compliance Specialist	Telephone Number	Date
Lynne Wigfield	**301/745-5802**	**6/4/02**

Approved:

Superintendent	Telephone Number	Date

APPENDIX B

Agency Coordination Letters

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401

October 7, 2002

Ms. Elizabeth Estes
Greenhorne & O'Mara, Inc.
9001 Edmonston Road
Greenbelt, Maryland 20770

RE: Stabilization/Reconstruction of Existing Canal Towpath Retaining Wall - 760 ft. at Lock 15, Chesapeake and Ohio Canal National Historic Park, Great Falls, Montgomery County, MD

Dear Ms. Estes:

This responds to your letter, received September 9, 2002, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further Section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

Parris N. Glendening
Governor

Kathleen Kennedy Townsend
Lt. Governor

Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

J. Charles Fox
Secretary

Karen M. White
Deputy Secretary

January 9, 2003

Ms. Elizabeth Edelen Estes
Greenhorne & O'Mara, Inc.
9001 Edmonston Road
Greenbelt, MD 20770

RE: **Environmental Review for National Park Service Stabilization or Selective Reconstruction of Existing Canal and Towpath Retaining Wall, Lock 15 in C & O Canal National Historic Park, Great Falls, Montgomery County, Maryland.**

Dear Ms. Estes:

The Wildlife and Heritage Service's Natural Heritage database indicates that the project site is located within a very sensitive area for rare, threatened and endangered species (rt&e's). The proposed work may also impact a Natural Heritage Area (NHA). Activities within NHAs are regulated so that the structure and species composition of the area are maintained [COMAR 27.01.09.04.C(2)(b)(vii)]. Due to the high potential for adverse impacts to rt&e's from this project, close coordination with the Wildlife and Heritage Service is necessary.

I have sent a copy of your project to Richard Wiegand of the Wildlife and Heritage Service for further evaluation. It would be helpful to have any information available on project details, such as the actual footprint of the project, width of disturbance, and other construction details relevant to the project. A site visit should be conducted with our regional ecologist and a Federal project engineer (from the Park Service) present, to examine the proposed areas of impacts and flag any known populations of rt&e species that may occur. This needs to be done before any work begins on the site. Mr. Wiegand can be reached at (301) 845-8997.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Specialist,
Wildlife and Heritage Service

ER# 2002.1763.mo
Cc: R. Wiegand, DNR
D. Brinker, DNR
R. Dintaman, DNR

Telephone:_____
DNR TTY for the Deaf: (410) 260-8835
Toll Free #: 1-877-620-8DNR

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Maryland Wildlife and Heritage Service
Natural Heritage Program
Tawes State Office Building E-1
Annapolis, Maryland 21401

March 27, 2003

Steven E. Pomeroy
Environmental Sciences Department
Greenhorne & O'Mara, Inc.
Greenbelt, MD 20770

RE: **Your E-mail to Lori Byrne (MD. DNR) dated 1/15/03 (Following your letter of 9/4/02)**
Site Visit to Lock #15 C&O Canal National Historical Park in Montgomery County, Maryland - Rare, Threatened and Endangered Species Coordination
ER Tracking#: 2002.1763.mo

Dear Mr. Pomeroy:

Per your request for information regarding rare, threatened and endangered (r,t&e) species occurring in the vicinity of this project area, following are a few comments.

The Bear Island area is adjacent to the proposed Lock #15 project, and is officially designated as a Natural Heritage Area supporting many species of r,t&e plants and animals. It is considered to be among the most important rare species sites in Maryland. Eleven plant species officially listed as state endangered and seven as state threatened have been documented to occur in this general vincinity. Additionally, twenty-two plant species considered to be rare or uncommon in Maryland have been documented here. Some of the Bear Island area is also designated as a "Wetland of Special State Concern", including vernal pools immediately adjacent to the project.

The scoured bedrock terrace habitats, vernal pools and other natural habitats support unusually diverse biological communities. The scoured bedrock terrace habitats are considered to be among the best examples of their kind remaining in the eastern United States, and are very rare in Maryland. Many rare species and habitats occur adjacent to the project area and could be indirectly impacted by the felling of trees, disturbance of the soil, alterations to surface hydrology, introduction of sediments, or re-routing of the hiking trail.

After visiting the project area with you on 3/26/03 I believe the construction alternatives offered for the 720' repair of the towpath in this area would have minimal direct impact on r,t&e species. This conclusion is based upon the proviso that the various alternatives do not require soil or canopy disturbances to adjacent habitats, and repair/construction activities will be limited to the current footprint of the C&O Canal towpath and berm.

1

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Forest, Wildlife and Heritage Service
Natural Heritage Program
Tawes State Office Building E-1
Annapolis, Maryland 21401

Soil or canopy disturbances in the immediate vicinity (including the current footprint of the C&O Canal towpath and berm) are likely to result in non-native weeds invading local habitats. This is a particular concern here because of the high percentage of state r,t&e species that occur nearby. Developing long-term weed control strategies prior to the start of this project is highly recommended. Determining methods and executing management strategies for controlling invasive weeds in adjacent areas during and following the Lock #15 project are essential for the protection of rare species and habitats.

Also of concern is access to the site by construction equipment and personnel, and location of a staging area for the project. Sensitive freshwater mussel habitat occurs in the canal bed both upstream and downstream of Lock #16. Crossing the canal bed to gain access to the project area should be discouraged. Sediments caused by such a crossing could be detrimental to the native mussels.

These comments and recommendations are in addition to those provided by Lori Byrne in her environmental review letter to you dated January 9, 2003.

As this project progresses we would be interested in continuing to review for possible adverse effects to rare species and habitats occurring in the vicinity. Please contact me with any questions regarding this project.

Kind Regards,

Richard H. Wiegand

Richard Wiegand
Central Region Ecologist
Maryland Natural Heritage Program
8831 Eureka Lane
Walkersville, MD. 21793

CC: David Brinker
Lori Byrne
Dianne Ingram

ER# 2002.1763.mo

2

July 23, 2002

Mr. Douglas D. Faris, Superintendent
National Park Service 2002 JUL 25 P 2:55
C&O Canal National Historical Park
1850 Dual Highway, Suite 100
Hagerstown, MD 21740

Maryland Department of Housing and Community Development

Division of Historical and Cultural Programs

100 Community Place
Crownsville, Maryland 21032

410-514-7600
1-800-756-0119
Fax: 410-987-4071
Maryland Relay for the Deaf:
711 or 1-800-735-2258

http://www.dhcd.state.md.us

Parris N. Glendening
Governor

Raymond A. Skinner
Secretary

Marge Wolf
Deputy Secretary

Re: Two Proposed Projects: 1.) Repair/Rehab of Great Falls Visitor Center & Facilities and 2.) Stabilization of Historic Towpath Wall & Construction of Footbridge, C&O National Historical Park

Dear Mr. Faris:

Thank you for notifying the Maryland Historical Trust (Trust) of the two above-referenced undertakings. We have reviewed the project information in accordance with Section 106 of the National Historic Preservation Act and are writing to provide our initial comments regarding effects upon historic properties.

Based upon our review of the information provided and a conversation between Andrew Lewis and Lynne Wigfield of our respective staffs, the Trust concurs with the National Park Service's general concepts for both undertakings. However, as your letter indicates, the National Park Service will coordinate further with the Trust if funding for these projects becomes available.

Assuming funding does become available, the Trust is likely to request additional information regarding the new restroom facilities. In addition to potential archeological concerns at the proposed new site, we understand that the current facilities were constructed by the CCC. Therefore, we are likely to have additional questions regarding why these facilities cannot be rehabilitated/adapted for continued use; what the future plans are for the facilities etc.

At this point, most of the remaining proposed work appears acceptable, but we look forward to working with the National Park Service if the projects are to be implemented. If you should have any questions or comments regarding these matters, please contact me (for archeology) at 410-514-7631 or Andrew Lewis (for historic built environment) at 410-514-7630. Thank you for providing us this opportunity to comment.

Sincerely,

Elizabeth J. Cole
Administrator
Project Review and Compliance

EJC/CAL
200202629/200202630

EQUAL HOUSING OPPORTUNITY